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Lakeside Engineering Company, Inc.

765-2313

Mill Never Built

This report for library as an example of mill design and renovation

ESTIMATE

500 TON PER DAY CONCENTRATOR

AND OTHER FACILITIES TO BE ERECTED

AT McCRACKEN MINE SITE

MOHAVE COUNTY, ARIZONA

Lakeside Engineering Company, Inc.

ESTIMATE

500 TON PER DAY CONCENTRATOR

AND OTHER FACILITIES TO BE ERECTED

AT McCRACKEN MINE SITE

MOHAVE COUNTY, ARIZONA

Prepared for

Chapman, Wood and Griswold Limited
133 East 14th Street, North Vancouver,
British Columbia, Canada

by

Engineering Group

Lakeside Engineering Company, Inc.
1549 South 11th East, Salt Lake City, Utah

Project: MCCM-98, et seq
29 November, 1968

Approved:

Roy Hickman
President

J. Lower
Project Manager

L. A. James
Chief Engineer

D. Rovig
Project Engineer

H. Trayner
Chief Designer

AREA CODE 801
487-0323

1549 SOUTH 11TH EAST

Lakeside Engineering Company, Inc.

SALT LAKE CITY, UTAH 84105

November 29, 1968

Chapman, Wood and Griswold
133 East 14th St.
Vancouver, B. C., Canada

Subject: Estimated Cost
500 Ton Per Day Concentrator
McCracken Mine, Mohave County, Arizona

Gentlemen:

The following data describes the estimated cost and time for the dismantling of the CWT mill located near Tucson, Arizona and the transporting and re-erection of the plant at the McCracken Mine site located some 41 miles southeast of Yucca, Arizona. Also described are certain other estimated costs such as road construction, water and natural gas supply, camp facilities and the like.

Certain power options are available to the project and are discussed in the power section of the estimate. The cost we have allocated to this item is, in our opinion, adequate regardless of which system or combination of systems is installed.

The summary and detail of the complete estimate for the building of the McCracken Concentrator follows or is contained in the body of the estimate:

SUMMARY OF THE ESTIMATED COST

	LABOR	MATERIALS	TOTAL
Dismantling At Tucson	$ 19,930.31	$ 12,121.00	$ 32,051.31
Transporting to McCracken	2,646.91	24,115.94	26,762.85
Erecting at McCracken	83,409.67	120,626.34	204,036.01
Power Plant	7,930.00	84,725.00	92,655.00
Road Building at McCracken	7,060.00	13,172.00	20,232.00
Water Supply	7,524.00	117,376.00	124,900.00
Natural Gas Supply		40,000.00	40,000.00
Camp Facilities	22,828.00	89,638.33	112,466.33
All Other (Shop, Warehouse, Supplies, Equipment etc.)	23,449.70	191,397.30	214,847.00
Total	$ 174,778.59	$ 693,171.91	$ 867,950.50
Contractor's Unallocated Expense (4% of direct labor cost)	6,991.15		6,991.15
Total	$ 181,769.74	$ 693,171.91	$ 874,941.65
Contractor's Overhead, Burden and Profit			70,000.00
Total Estimated Cost			$ 944,941.65

The estimated time for completion is 7 months; beginning 1 December, 1968 and ending 30 June, 1969.

Respectfully submitted,

LAKESIDE ENGINEERING CO., INC.

Roy Hickman

Roy Hickman, President

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Lakeside Engineering Company, Inc.

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TOTAL ESTIMATED COST

General Summary No. 1	$ 262,850.17
General Summary No. 2	605,100.33
TOTALS	$ 867,950.50

Lakeside Engineering Company, Inc.

GENERAL SUMMARY NO. 1

Dismantle - Tucson CWT	$ 32,051.31
Hauling - Tucson to McCracken	26,762.85
Complete Erection - McCracken	204,036.01
TOTAL	262,850.17

GENERAL SUMMARY NO. 2

Power Plant & Assay Lab	103,335.00
Water Supply	124,900.00
Natural Gas Supply	40,000.00
Road Building, McCracken	20,232.00
Shop, Warehouse, Office	71,148.00
Trailer Housing	51,766.00
Permanent Housing	60,700.33
Shop Tools & Equipment	30,697.00
Monthly Rental Equipment	80,350.00
Warehouse Supplies	4,940.00
Welding Supplies	6,082.00
Safety Equipment & Supplies	5,950.00
Tailings Pond	5,000.00
TOTAL	$ 605,100.33

SCHEDULE NO. I

DISMANTLE - TUCSON, ARIZONA

SCOPE OF WORK: To completely dismantle the mill known and referred to as CWT, Tucson, Arizona; purchased by Magnum. Personnel employed at this time will continue on to completion of erection to assure maximum efficiency and reliability of work. The insurance Magnum brought in at this time will continue on to completion. Every effort will be made during dismantling to mark, label or otherwise identify each piece to insure speed of erection. Responsibility includes placement of all equipment upon transport companies' trucks.

SUMMARY DISMANTLE COSTS

CWT

LABOR		$ 15,185.00	
Add: 12% Payroll Tax	$ 1,822.20		
15% 6th day	2,277.75		
2.5% vacation	379.63		
1.75% hospital	265.73		
TOTAL LABOR			$ 19,930.31
MATERIALS			5,261.00
CRANE			6,860.00
TOTAL DISMANTLE COST			$ 32,051.31

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
1. Vibrating Grizzly FS025	2 ms	$ 52.40	$ 20.00	$ 20.00	$ 92.40
2. Jaw Crusher FS030	3 ms	80.00	18.00	45.00	143.00
3. Belt Conveyor FS035	16 ms	419.20	60.00	240.00	719.20
4. Stockpile Feed Hopper FS040A	2 ms	52.40	20.00	20.00	92.40
5. Apron Feeder FS045	12 ms	314.40	40.00	60.00	414.40
6. Conveyor Assembly FS050	4 ms	104.80	18.00	60.00	182.80
7. Magnet FS052	1/2 ms	13.10	3.00	15.00	31.10
8. Rod Deck Screen FS055	2 ms	52.40	20.00	30.00	102.40
9. Cone Crusher	16 ms	419.20	90.00		509.20
10. Conveyor FS065	8 ms	209.60		60.00	269.60
11. Conveyor FS070	4 ms	104.80	35.00	90.00	229.80
12. Transfer Tower FS072	8 ms	209.60	30.00	200.00	439.60
TOTALS	77.5 ms	2,031.90	354.00	840.00	3,225.90

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP.RENTAL	TOTAL
13. Conveyor Belt FS075	12 ms	$ 314.40	$ 30.00	$ 120.00	$ 464.40
14. Fine Ore Bin FS080	24 ms	628.80	125.00	600.00	1,353.80
15. Feeders FS080A FS080B	4 ms	104.80	125.00	60.00	289.80
16. Feeder FS100	4 ms	104.80	28.00	60.00	192.80
17. Feed Belt FS105	4 ms	104.80	28.00	60.00	192.80
18. Scale Belt FS110	16 ms	419.20	112.00	120.00	651.20
19. Belt Weigh Scales	1 ms	26.20	75.00	30.00	131.20
20. Ball Mill FS120	36 ms	943.20	198.00		1,141.20
21. Ball Mill Clutch FS120A	1/2 ms	13.10			13.10
22. Ball Mill Gear Reducer FS120B	2 ms	52.40	18.00	15.00	85.40
23. Ball Mill Motor FS120C	2 ms	52.40	16.00	60.00	128.40
TOTALS	105 1/2 ms	2,764.10	755.00	1,125.00	4,644.10
			TOTALS FORWARDED		3,225.90
			TOTAL THIS SHEET		7,870.00

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
24. Ball Mill Discharge Sump FS125	1/2 ms	$ 13.10	$ 12.00	$ 20.00	$ 45.10
25. Ball Mill Discharge Pump FS130	1/2 ms	13.80	12.00	10.00	35.80
26. Cyclone Classifier FS135 FS135A	2 ms	52.40	30.00	10.00	92.40
27. Scoop Box FS136	1 ms	26.20	12.00	40.00	78.20
28. Samplers FS201,138,215,283,295	4 ms	104.80	10.00	30.00	144.80
29. 8 x 8 Conditioner FS140	1 ms	26.20	8.00	10.00	44.20
30. Flotation Cells FS200	2 ms	52.40	40.00	60.00	152.40
31. Vertical Pump FS203 202 Sump	1 ms	26.20	8.00	20.00	54.20
32. Flotation Cells FS205	2 ms	52.40	16.00	20.00	88.40
33. Flotation Cells FS210	2 ms	52.40	16.00	20.00	88.40
34. Vertical Pump FS218	1 ms	26.20	8.00	20.00	54.20
TOTALS	17 ms	$ 446.10	$ 172.00	$ 260.00	$ 878.10
			TOTALS FORWARDED		7,870.00
			TOTAL THIS SHEET		$ 8,748.10

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
35. Thickener FS220	8 ms	$ 209.60	$ 120.00	$ 300.00	$ 629.60
36. Slurry Pump FS230	1 ms	26.20	8.00	20.00	54.20
37. Sump & Pump FS235 FS240	1 ms	26.20	8.00	20.00	54.20
38. Cyclone & Sump FS245 FS255	1 ms	26.20	8.00	20.00	54.20
39. Regrind Mill FS250	12 ms	314.40	60.00	300.00	674.40
40. Slurry Pump FS260	1 ms	26.20	8.00	20.00	54.20
41. Slurry Pump FS270	1 ms	26.20	12.00	20.00	58.20
42. 10 x 10 Conditioner FS275	2 ms	52.40	18.00	15.00	85.40
43. Flotation Cells FS280	2 ms	52.40	42.00	30.00	124.40
44. Vertical Sump Pump FS282	1 ms	26.20		20.00	46.20
45. Flotation Cells FS285	1 ms	26.20	16.00	20.00	62.20
TOTALS	31 ms	$ 812.20	$ 300.00	$ 785.00	$ 1,897.20
			TOTALS FORWARDED		8,748.10
			TOTAL THIS SHEET		$10,645.30

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
46. Flotation Cells FS290	2 ms	$ 52.40	$ 44.00	$ 20.00	$ 116.40
47. Vertical Pump FS298	1 ms	26.20	8.00	20.00	54.20
48. Thickener FS300	16 ms	419.20	120.00	500.00	1,039.20
49. Slurry Pump FS310	1 ms	26.20	8.00	10.00	44.20
50. Disc Filter FS400-FS425	12 ms	314.40	80.00	60.00	454.40
51. Disc Filter FS435-FS460	4 ms	104.80	30.00	60.00	194.80
52. Sump FS500	1/2 ms	13.80	8.00	20.00	41.80
53. Pump FS505	1/2 ms	13.10	12.00	10.00	35.10
54. Cyclones & Sump FS510,511,515	1 ms	26.20	8.00	20.00	54.20
55. Pump FS520	1 ms	26.20	8.00	20.00	54.20
56. Thickener FS525	24 ms	628.80		300.00	928.80
TOTALS	63 ms	$ 1,651.30	$ 326.00	$ 1,040.00	$ 3,017.30
			TOTALS FORWARDED		10,645.30
			TOTAL THIS SHEET		$13,662.60

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
57. Sump & Pump FS530 FS535	1 ms	$ 26.20	$ 8.00	$ 20.00	$ 54.20
58. Crusher Bldg. FS805	72 ms	1,886.40	1,000.00	600.00	3,486.40
59. Mill Bldg. FS830	138 ms	3,615.60	1,800.00	1,800.00	7,215.60
60. Bridge Crane FS835	8 ms	209.60	80.00	120.00	409.60
61. Ducon Dust System FS840,844,845	12 ms	314.40	20.00	40.00	374.40
62. Vertical Pumps FS859,855,860	1 ms	26.20	8.00	10.00	44.20
63. Pump FS870A	1/2 ms	12.40		10.00	22.40
64. Truck Scales FS880	16 ms	419.20	125.00	40.00	584.20
65. Halliburton Density Control FS890		NO CHARGE			
66. Agitator & Pump FS905,925	1 ms	26.20	4.00	20.00	50.20
67. Reagent Tanks FS906-912	6 ms	157.20	16.00	60.00	233.20
TOTALS	255 ms	$ 6,693.40	$ 3,061.00	$ 2,720.00	$ 12,474.40
			TOTALS FORWARDED		13,662.60
			TOTAL THIS SHEET		$ 26,137.00

A. DISMANTLE - TUCSON

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
68. Steady Head Tanks FS935-941	4 ms	$ 104.80	$ 35.00	$	$ 139.80
69. Low Pressure Blower FS990	2 ms	52.40	8.00	20.00	80.40
70. Starting Equipment & Motor Control Center	24 ms	628.80	250.00	60.00	938.80
TOTALS	30 ms	$ 786.00	$ 293.00	$ 80.00	$ 1,159.00
			TOTALS FORWARDED		26,137.00
			TOTAL THIS SHEET		$27,296.00

SCHEDULE NO. II

HAULING, TUCSON TO McCRACKEN, ARIZONA

SCOPE OF WORK: Transportation of machinery and all equipment shall be done by a commercial carrier. Full insurance shall be borne by the company retained to do the transporting of equipment. Responsibility is to deliver such to job site on a pre-determined schedule.

SUMMARY HAULING COSTS

CWT

LABOR		$ 2,016.70	
Add:	12% Payroll Tax	$ 242.00	
	15% 6th day	302.50	
	2.5% vacation	50.42	
	1.75% hospital	35.29	
TOTAL LABOR			$ 2,646.91
EQUIPMENT RENTAL			8,687.48
HAULING			15,428.46
TOTAL HAULING COST			$ 26,762.85

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
1. Vibrating Grizzly FS025	1/2 ms	$ 12.40	$ 34.00	$ 77.00	$ 123.40
2. Jaw Crusher FS030	2 ms	104.80	120.00	1,054.40	1,279.20
3. Conveyor Belt FS035	2 ms	52.40	160.00	470.00	682.40
4. Stockpile Feeder Hopper FS040A	1 ms	26.20	20.00	72.00	118.20
5. Apron Feeder FS045	1 ms	26.20	40.00	129.00	195.20
6. Conveyor FS050	1 ms	26.20	40.00	494.00	560.20
7. Magnet FS052	1/2 ms	13.10	13.00	5.00	31.10
8. Rod Deck Screen FS055	1/2 ms	13.10	20.00	72.00	105.10
9. Cone Crusher FS060	2 ms	52.40	1,767.55	1,568.94	3,388.89
10. Conveyor Belt FS065	1 ms	26.20	80.00	235.00	341.20
11. Conveyor FS070	2 ms	52.40	80.00	300.00	432.40
12. Transfer Tower FS072	1 ms	26.20	80.00	289.00	395.20
TOTALS		431.60	2,454.55	4,766.34	7,652.49

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
13. Conveyor Belt FS075	1 ms	$ 26.20	$ 80.00	$ 289.00	$ 395.20
14. Fine Ore Bin FS080	2 ms	52.40	200.00	528.00	780.40
15. Feeders FS080A FS080B	1 ms	26.20	31.00	48.00	105.20
16. Feeder FS100	1 ms	26.20	27.00	73.00	126.20
17. Feed Belt FS105	1 ms	26.20	27.00	73.00	126.20
18. Scale Belt FS110	1 ms	26.20	100.00	132.00	258.20
19. Belt Weigh Scales FS115			7.00	7.00	14.00
20. Ball Mill FS120	4 ms	104.80	2,945.93	3,233.85	6,284.58
21. Fawick Clutch FS120A	1 ms	26.20	66.00	9.00	101.20
22. Gear Reducer FS120B	1 ms	26.20	40.00	84.00	150.20
23. Ball Mill Motor FS120C	1 ms	26.20	40.00	89.00	155.20
TOTALS		$ 366.80	$ 3,563.93	$ 4,565.85	$ 8,496.58
		TOTALS FORWARDED			7,652.49
		TOTAL THIS SHEET			$ 16,149.07

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
24. Ball Mill Discharge Pump FS125	1 ms	$ 26.20	$ 20.00	$ 28.00	$ 74.20
25. Ball Mill Discharge Pump FS130	1 ms	26.20	13.00	40.60	79.80
26. Cyclone Classifier FS135 & 135A	1 ms	26.20	27.00	24.00	77.20
27. Scoop Box FS136	1/2 ms	13.10	20.00	24.00	57.10
28. Samplers FS201,138,215,283,295	1 ms	26.20	20.00	29.50	75.70
29. 8 x 8 Conditioner FS140	1 ms	26.20	13.00	40.60	79.80
30. Flotation Cells FS200	1 ms	26.20	40.00	191.95	258.15
31. Vertical Pump FS203 202 Sump	1 ms	26.20	13.00	24.00	63.20
32. Flotation Cells FS205	1 ms	26.20	20.00	36.00	82.20
33. Cells FS210	1 ms	26.20	20.00	36.00	82.20
34. Vertical Pump FS218	1 ms	26.20	13.00	24.00	63.20
TOTALS		$ 275.10	$ 219.00	$ 498.65	$ 992.75
		TOTALS FORWARDED			16,149.07
		TOTALS THIS SHEET			$ 17,141.82

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
35. Thickener FS220	1 ms	$ 26.20	$ 80.00	$ 222.61	$ 328.81
36. Pump FS230	1 ms	26.20	13.00	24.00	63.20
37. Sump incl Pump FS235 & 240	1/2 ms	13.10	13.00	13.80	39.90
38. Classifier Cyclone & Sump FS245,255	1/2 ms	13.10	13.00	13.80	39.90
39. Regrind Mill FS250	1 ms	26.20	160.00	245.27	431.47
40. Pump FS260	1 ms	26.20	13.00	24.00	63.20
41. Slurry Pump FS270	1/2 ms	13.10	13.00	14.80	40.90
42. 10 x 10 Conditioner FS275	1 ms	26.20	27.00	86.80	140.00
43. Cells FS280	1 ms	26.20	27.50	230.00	283.70
44. Vertical Sump Pump FS282	1 ms	26.20	13.00	24.00	63.20
45. Cells FS285	1 ms	26.20	20.00	80.00	126.20
TOTALS		$ 248.90	$ 392.50	$ 979.08	$ 1,620.48
		TOTALS FORWARDED			17,141.82
		TOTALS THIS SHEET			$18,762.30

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
46. Cells FS290	1 ms	$ 26.20	$ 20.00	$ 80.00	$ 126.20
47. Vertical Pump	1 ms	26.20	13.00	24.00	63.20
48. Concentrate Thickener FS300	2 ms	52.40	143.00	360.00	555.40
49. Slurry Pump FS310	1/2 ms	13.10	13.00	4.25	30.35
50. Filter FS400-425	1 ms	26.20	54.00	108.00	188.20
51. Filter FS435-460	1 ms	26.20	60.00	120.00	206.20
52. Sump FS500	1/2 ms	13.10	20.00	13.80	46.90
53. Pump FS505	1/2 ms	13.10	13.00	13.80	39.90
54. Cyclone Parts FS510,511,515	1/2 ms	13.10	13.00	24.00	50.10
55. Pump FS520	1/2 ms	13.10	13.00	13.80	39.90
56. Tank FS525	2 ms	52.40	270.00	1,475.63	1,798.03
TOTALS		$ 275.10	$ 632.00	$ 2,237.28	$ 3,144.38
		TOTALS FORWARDED			18,762.30
		TOTALS THIS SHEET			$21,906.68

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
57. Sump FS530, 535	1/2 ms	$ 13.10	$ 13.00	$ 27.70	$ 53.80
58. Crusher Bldg. FS805	2 ms	52.40	400.00	480.00	932.40
59. Mill Bldg. FS830	4 ms	104.80	666.50	973.00	1,744.30
60. Bridge Crane FS835	1 ms	26.20	80.00	288.00	394.20
61. Ducon Dust System FS840,844,845	1 ms	26.20	53.00	120.00	199.20
62. Vertical Pumps FS859,855,860	1 ms	26.20	20.00	13.80	60.00
63. Pump FS870A	1/2 ms	13.10	13.00	24.00	50.10
64. Truck Scales FS880	1 ms	26.20	40.00	120.00	186.20
65. Halburton Density Control FS890	1 ms	26.20		3.00	29.20
66. Agitator FS925, 905	1 ms	26.20	13.00	31.76	70.96
TOTALS		$ 340.60	$ 1,298.50	$ 2,081.26	$ 3,720.36
		TOTALS FORWARDED			21,906.68
		TOTALS THIS SHEET			$25,627.04

B. HAULING - TUCSON

DESCRIPTION	QUANTITY	LABOR	EQUIP. RENTAL	HAULING	TOTAL
67. Reagent Mix Tanks FS905,907,908, 909,910,911,912	1/2 ms	13.10	27.00	36.00	76.10
68. Steady Head Tanks FS935-941	1/2 ms	13.10		12.00	25.10
69. Blower FS990	1 ms	26.20	20.00	12.00	58.20
70. Starting Gear & Motor Control Center	1 ms	26.20	80.00	240.00	346.20
TOTALS		$ 78.60	$ 127.00	$ 300.00	$ 505.60
		TOTALS FORWARDED			25,627.04
		TOTALS THIS SHEET			$26,132.64

SCHEDULE NO. III

ERECTION, McCRACKEN

SCOPE OF WORK: Includes complete site preparation and proper placement of concrete footings, foundations etc. Site work and initial concrete work as per bar diagram shall begin during dismantling and hauling. Modifications during erection shall proceed on a need basis, as will the increase of personnel required to complete erection according to schedule. Responsibilities include lifting equipment from transportation vehicles to proper placement areas.

Lakeside Engineering Company, Inc.

November 29, 1968

MEMO TO: Roy Hickman

FROM: Jim Lower

SUBJECT: Various Changes in the CWT Mill when Re-Erected at McCracken

The CWT Concentrator presently constructed at its Tucson location has an excellent basic arrangement, particularly in the milling section. The mill and crusher buildings, however, will have to be separated with building design changes.

The crushing section has had considerable re-design. By constructing the apron at the crude ore bin, pit run rock will be stockpiled similar to CWT; then as required, the crusher operator will feed the bin with a front end loader. Both the Primary Jaw and Secondary Cone will be mounted on beams over a conveyor trench. This trench is 10 feet wide x 7 feet deep. The belt conveyor No. 1 will be suspended from the beams. The floor will be open with no pinch areas for the belting and complete access to all sides of the conveyor. Crushing will be closed circuit manufacturing a -3/8" product. The screen will be over the fine ore storage bin. Dust will be kept at a minimum in the crusher room because of the screen location. The Ducon dust collector will be utilized in the crusher area. The potential crushing capacity of the plant will be some 230 TPH for dry ore. Four crushing hours will normally satisfy the mill for the day.

The mill ore feed and storage bin will be the same as CWT (approximately 1,000 tons). The ball mill feeders at CWT were a source of trouble, so these have been re-designed. The proposed design is functioning excellently at a number of plants.

In order to facilitate a tonnage increase without expanding the building, the ball mill foundation has been rotated 90°.

The mill feed belt is so arranged that if a second mill is added, no alteration other than extension will be necessary.

All the foundations carrying heavy equipment are located on natural rock. One and one quarter inch holes will be drilled 4 feet deep. One inch diameter rebar of appropriate length is inserted into these holes. Rock-Loc, an anchor epoxy, will be used to cement the bars in rock. The bars will then be welded or tied to the reinforcement system. By using this method, massive concrete foundations are avoided and along with obvious savings on materials, a more pleasing and servicable equipment profile will result.

Pulp and concentrate pumps will be on the ground floor of the mill building where they may be serviced by a monorail crane from above. Pulp and concentrates may be diverted to suit the metallurgy as the arrangement permits a wide circuitry selection, particularly with plastic piping.

Sumps in the mill floor have no outside drains. Spills will be pumped back to the circuit and thus avoid inadvertent mineral losses.

The flotation floor will be unobstructed by posts, beams or bridges giving a clear view of the operating equipment. Flotation cells are so arranged as to permit expansion of the section yet provide easy access and viewing. No change in the floor joist system is anticipated with this cell arrangement. At the ball mill discharge box, a gravity recovery system may be inserted if the metallurgy indicates that such a unit will be beneficial to the circuit.

The reagent feeding system will be modified and the cyclones will be near the ball mill scoop box.

The filter floor at the back of the building will be raised three feet thus allowing for a greater storage of concentrates. This will improve the filter overflow relationship to the thickener and help the vacuum column on the pump.

The operating booth will be located on one side of the filter floor where a panoramic view of the mill operations may be had. Located on the opposite side will be the reagent mixing and storage room.

Concentrate loading will be at the lower end of the mill using a front end loader.

The McCracken Concentrator will be automated with density controls, feed controls and reagent feeding. Some of these components have been acquired with the CWT mill. Automatic sampling will be installed at appropriate locations.

Mill personnel will consist of an operator and helper on each of the 3 shifts. The day shift will have, in addition, the superintendent, repairman and crusher man. After crushing the bin full, the crusher man will then load concentrates and have other duties.

J. Lower

SUMMARY

McCRACKEN - CONCENTRATOR ERECTION AREA CLASSIFICATION

ERECTION, MACHINERY	$ 63,847.32
ERECTION, CONCRETE - ALL AREAS	76,535.83
ERECTION, MODIFICATION	63,652.86
TOTAL ERECTION COSTS	$ 204,036.01

SUMMARY

ERECTION AREAS CLASSIFICATION

DESCRIPTION	LABOR	MATERIALS	TOTALS
Erection, Machinery	$ 38,515.32	$ 25,332.00	$ 63,847.32
Erection, Concrete	33,146.15	43,389.68	76,535.83
Erection, Modification	11,748.20	51,904.66	63,652.86
TOTALS	$ 83,409.67	$ 120,626.34	$ 204,036.01

SUMMARY ERECTION COSTS

MACHINERY (CWT)

LABOR		$ 29,345.00	
Add: 12% Payroll Tax	$ 3,521.40		
15% 6th day	4,401.75		
2.5% Vacation	733.63		
1.75% Hospital	513.54		
TOTAL LABOR			$ 38,515.32
MATERIALS			18,817.00
EQUIPMENT RENTAL			6,515.00
TOTAL ERECTION COST			$ 63,847.32

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
1. Vibrator Grizzly FS025	4 ms	$ 104.80	$ 60.00	$ 20.00	$ 184.80
2. Jaw Crusher FS030	4 ms	104.80	90.00	60.00	254.80
3. Stockpile Feeder Hopper FS040A	12 ms	314.40	1,025.00	40.00	1,379.40
4. Conveyor Assembly FS050 (A & B)	10 ms	262.00	465.00	60.00	787.00
5. Magnet FS052	4 ms	104.80	135.00	20.00	259.80
6. Rod Deck Screen FS055	9 ms	231.60	320.00	40.00	591.60
7. Cone Crusher FS060	16 ms	419.20	90.00	90.00	599.20
8. Conveyor FS070	12 ms	308.80	466.00	60.00	834.80
9. Fine Ore Bin FS080	200 ms	5,072.00	1,200.00	800.00	7,072.00
10. Feeders FS080A FS080B	156 ms	4,003.20	1,200.00	200.00	5,403.20
11. Feeder FS100	12 ms	314.40	1,025.00	40.00	1,379.40
12. Feeder Belt FS105	12 ms	314.40	1,025.00	40.00	1,379.40
TOTALS		$ 11,554.40	$ 7,101.00	$ 1,470.00	$ 20,125.40

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
13. Scale Belt FS110	15 ms	$ 386.00	$ 275.00	$ 60.00	$ 721.00
14. Belt Weigh Scales FS115	2 ms	52.40	800.00	20.00	872.40
15. Ball Mill FS120	16 ms	419.20	260.00	180.00	859.20
16. Fawick Clutch FS120A	2 ms	52.40	85.00	20.00	157.40
17. Gear Reducer FS120B	2 ms	52.40	65.00	20.00	137.40
18. Ball Mill Motor FS120C	2 ms	52.40	26.00	20.00	98.40
19. Ball Mill Discharge Sump FS125	1 ms	26.20	20.00	10.00	56.20
20. Ball Mill Discharge Pump FS130	1 ms	26.20	225.00	10.00	261.20
21. Cyclone Classifier FS135	16 ms	419.20	150.00	20.00	589.20
22. Scoop Box FS136	6 ms	157.20	87.00	40.00	284.20
TOTALS		1,643.60	1,993.00	400.00	4,036.60
		TOTALS FORWARDED			20,125.40
		TOTALS THIS SHEET			24,162.00

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
13. Scale Belt FS110	15 ms	$ 386.00	$ 275.00	$ 60.00	$ 721.00
14. Belt Weigh Scales FS115	2 ms	52.40	800.00	20.00	872.40
15. Ball Mill FS120	16 ms	419.20	260.00	180.00	859.20
16. Fawick Clutch FS120A	2 ms	52.40	85.00	20.00	157.40
17. Gear Reducer FS120B	2 ms	52.40	65.00	20.00	137.40
18. Ball Mill Motor FS120C	2 ms	52.40	26.00	20.00	98.40
19. Ball Mill Discharge Sump FS125	1 ms	26.20	20.00	10.00	56.20
20. Ball Mill Discharge Pump FS130	1 ms	26.20	225.00	10.00	261.20
21. Cyclone Classifier FS135	16 ms	419.20	150.00	20.00	589.20
22. Scoop Box FS136	6 ms	157.20	87.00	40.00	284.20
TOTALS		1,643.60	1,993.00	400.00	4,036.60
		TOTALS FORWARDED			20,125.40
		TOTALS THIS SHEET			24,162.00

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP.RENTAL	TOTAL
23. Sampler Heads FS138	1 ms	$ 26.20	$ 25.00	$ 5.00	$ 56.20
24. Samplers FS201	1 ms	26.20	25.00	5.00	56.20
25. Sampler FS215	1 ms	26.20	25.00	5.00	56.20
26. Sampler FS283	1 ms	26.20	25.00	5.00	56.20
27. Sampler FS295	1 ms	26.20	25.00	5.00	56.20
28. 8 x 8 Conditioner FS140	4 ms	104.80	130.00	5.00	239.80
29. Flotation Cells FS200	12 ms	314.40	288.00	30.00	632.40
30. Vertical Pump FS203	1 ms	26.20	60.00	10.00	96.20
31 Cells FS205	4 ms	104.80	180.00	20.00	304.80
32. Cells FS210	4 ms	104.80	180.00	20.00	304.80
33. Vertical Pump FS218	1 ms	26.20	80.00	10.00	116.20
TOTALS		$ 812.20	$ 1,043.00	$ 120.00	$ 1,975.20
		TOTALS FORWARDED			24,162.00
		TOTALS THIS SHEET			$ 26,137.20

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
34. Pump FS230	1 ms	$ 26.20	$ 60.00	$ 10.00	$ 96.20
35. Sump Incl Pump FS240	2 ms	52.40	30.00	5.00	87.40
36. Pump FS260	1 ms	26.20	60.00	10.00	96.20
37. Slurry Pump FS270	1 ms	26.20	90.00	20.00	136.20
38. 10 x 10 Conditioner FS275	2 ms	52.40	120.00	10.00	182.40
39. Flotation Cells FS280	12 ms	314.40	320.00	30.00	664.40
40. Vertical Sump Pump FS282	1 ms	26.20	60.00	10.00	96.20
41. Cells FS285	12 ms	314.40	270.00	20.00	604.40
42. Cells FS290	12 ms	314.40	250.00	20.00	584.40
43. Vertical Pump FS298	1 ms	26.20	60.00	10.00	96.20
44. Concentrate Thickener FS300	28 ms	733.60	250.00	400.00	1,383.60
TOTALS		$ 1,912.60	$ 1,570.00	$ 545.00	$ 4,027.60
		TOTALS FORWARDED			26,137.20
		TOTALS THIS SHEET			$ 30,164.80

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
45. Filter FS435-460	10 ms	$ 262.00	$ 200.00	$ 30.00	$ 492.00
46. Pump FS505	1 ms	26.20	85.00	5.00	116.20
47. Tanks FS525-75 ft.	12 ms	314.40	200.00	600.00	1,114.40
48. Crusher Bldg. FS805	100 ms	2,620.00	1,800.00	1,000.00	5,420.00
49. Mill Bldg. FS830	270 ms	7,074.00	2,800.00	2,000.00	11,874.00
50. Bridge Crane FS835	10 ms	262.00	200.00	60.00	522.00
51. Dust System FS840,844,845	12 ms	308.80	200.00	40.00	548.80
52. Vertical Pumps FS859,855,860	2 ms	52.40	85.00	5.00	142.40
53. Pump FS870A	2 ms	52.40	90.00	10.00	152.40
54. Truck Scales FS880	18 ms	463.20	225.00	80.00	768.20
55. Density Control FS890	4 ms	104.80	65.00		169.80
TOTALS		$ 11,540.20	$ 5,950.00	$ 3,830.00	$ 21,320.20
		TOTALS FORWARDED			30,164.80
		TOTALS THIS SHEET			$ 51,485.00

C. ERECTION - McCRACKEN

DESCRIPTION	QUANTITY	LABOR	MATERIALS	EQUIP. RENTAL	TOTAL
56. Reagent Mix Tanks FS905,907,908, 909,910,911,912	10 ms	$ 262.00	$ 90.00	$ 20.00	$ 372.00
57. Steady Head Tanks FS935-941	10 ms	262.00	150.00		412.00
58. Blower FS990	20 ms	524.00	120.00	10.00	654.00
59. Starting Gear & Motor Control Center	30 ms	834.00	800.00	120.00	1,754.00
TOTALS		$ 1,882.00	$ 1,160.00	$ 150.00	$ 3,192.00
		TOTALS FORWARDED			51,485.00
		TOTALS THIS SHEET			$ 54,677.00

SUMMARY CONCRETE WORK

AREA CLASSIFICATION

	LABOR	MATERIALS	TOTAL
A. Primary & Secondary Crushing	$ 12,383.80	$ 16,216.20	$ 28,600.00
B. Grinding, Classification & Thickening	8,876.50	11,623.50	20,500.00
C. Flotations	238.15	311.85	550.00
D. Reagents	10.82	14.18	25.00
E. Concentrates	2,013.45	2,622.38	4,635.83
F. Crusher Building	1,732.00	2,268.00	4,000.00
G. Mill Building	7,891.43	10,333.57	18,225.00
TOTALS	$ 33,146.15	$ 43,389.68	$ 76,535.83

Lakeside Engineering Company, Inc.

GENERAL CONCRETE SUMMARY

AREA	QUANTITY
CRUSHER BUILDING	200 cu. yds.
MILL FOUNDATION	150
MILL BUILDING & FOOTINGS	182 1/2
PUMP BASES, ETC.	20 1/2
TANK BASES	173
POWER HOUSE	19
SHOP, WAREHOUSE, OFFICE	199
TRUCK SCALES	40
ASSAY LAB	40
PERMANENT HOUSING	51
TOTAL CUBIC YARDS	1,054 cu. yds.

CONCRETE WORK

AREA CLASSIFICATION

A. PRIMARY & SECONDARY CRUSHING

	QUANTITY	UNIT	LABOR	MATERIALS	TOTAL
1. Hopper & Ore Bin	50	CY	$ 2,165.00	$ 2,835.00	$ 5,000.00
2. Grizzly & Feeder	25	CY	1,082.50	1,417.50	2,500.00
3. Jaw Crusher	65	CY	2,814.50	3,685.50	6,500.00
4. Cone Crusher	70	CY	3,031.00	3,969.00	7,000.00
5. Dust System	6	CY	259.80	340.20	600.00
6. Fine Ore Bin	70	CY	3,031.00	3,969.99	7,000.00
TOTALS			$12,383.80	$16,216.20	$28,600.00

CONCRETE WORK

AREA CLASSIFICATION

B. GRINDING CLASSIFICATION & THICKENING

	QUANTITY	UNIT	LABOR	MATERIALS	TOTAL
1. Ball Mill	150	CY	$ 6,495.00	$ 8,505.00	$ 15,000.00
2. Thickening Tank	55	CY	2,381.50	3,118.50	5,500.00
TOTALS			$ 8,876.50	$ 11,623.50	$ 20,500.00

C. FLOTATIONS

1. Conditioners	1 1/2	CY	64.95	85.05	150.00
2. Blower	1/2	CY	21.65	28.35	50.00
3. Pumps	3 1/2	CY	151.55	198.45	350.00
TOTALS			$ 238.15	$ 311.85	$ 550.00

CONCRETE WORK

AREA CLASSIFICATION

D. REAGENT MIXING, FEEDING, INSTRUMENTATION & SAMPLING

	QUANTITY	UNIT	LABOR	MATERIALS	TOTAL
1. Pumps	1/4	CY	$ 10.82	$ 14.18	$ 25.00

E. CONCENTRATE THICKENING & FILTRATION

1. Concentrate Thickener	2	CY	86.60	113.40	200.00
2. Filter	4	CY	173.20	226.80	400.00
3. Vacuum Pump	1/2	CY	21.65	14.18	35.83
4. Truck Scales	40	CY	1,732.00	2,268.00	4,000.00
TOTALS			$ 2,013.45	$ 2,622.38	$ 4,635.83

CONCRETE WORK

AREA CLASSIFICATION

F. CRUSHER BUILDING

	QUANTITY	UNIT	LABOR	MATERIALS	TOTAL
1. Footings, Foundation, Slabs	40	CY	$ 1,732.00	$ 2,268.00	$ 4,000.00

G. MILL BUILDING

1. Footings, Foundation, Slabs	180	CY	7,794.00	10,206.00	18,000.00
2. Electrical	2 1/4	CY	97.43	127.57	225.00
TOTALS			$ 7,891.43	$ 10,333.57	$ 18,225.00

SUMMARY

REQUIRED ERECTION MODIFICATION AND PREPARATION

	LABOR	MATERIALS	TOTAL
A. Primary & Secondary Crushing	$ 4,322.00	$ 2,989.00	$ 7,311.00
B. Grinding, Classification & Thickening	784.20	432.00	1,216.20
C. Crusher Building	1,462.00	19,443.00	20,905.00
D. Mill Building	5,180.00	29,040.66	34,220.66
TOTALS	$ 11,748.20	$ 51,904.66	$ 63,652.86

McCRACKEN

REQUIRED ERECTION MODIFICATION AND PREPARATION

A. PRIMARY & SECONDARY CRUSHING

	LABOR	MATERIALS	TOTAL
1. Hopper & Ore Bin	$ 1,100.00	$ 790.00	$ 1,890.00
2. Jaw Crusher	1,100.00	395.00	1,495.00
3. Cone Crusher	200.00	75.00	275.00
4. Transfer Belts	262.00	529.00	791.00
5. Electrical	960.00	800.00	1,760.00
6. Plumbing	700.00	400.00	1,100.00

B. GRINDING, CLASSIFICATION & THICKENING

1. Mill Scale & Delivery Belt (Muck transfer & Skirt boards)	627.00	175.00	802.00
2. Grinding (Ball Mill, Bearings, Gears Clutch, Motor, Liners, Scoop Box & Discharge)	157.20	257.00	414.20
TOTAL			$ 8,527.20

McCRACKEN

REQUIRED ERECTION MODIFICATION AND PREPARATION

C. BUILDINGS (CRUSHER)

	LABOR	MATERIALS	TOTAL
1. Excavations Contract at $5.00		$ 11,350.00	$ 11,350.00
2. Steelwork (erection)	1,200.00	1,283.00	2,483.00
3. Electrical		4,350.00	4,350.00
4. Plumbing		2,200.00	2,200.00
5. Crane (bridge)	262.00	260.00	522.00

D. MILL BUILDING

1. Excavations Contract at $5.00		13,450.00	13,450.00
2. Steelwork (erection)	3,780.00	2,418.81	6,198.81
3. Electrical		7,651.00	7,651.00
4. Plumbing & Sanitation		4,320.85	4,320.85
Cranes (3 Crawls, purchase)	1,400.00	1,200.00	2,600.00

TOTAL	$ 55,125.66
TOTAL FORWARDED	8,527.20
TOTAL	$ 63,652.86

SUMMARY

McCRACKEN - CONCENTRATOR

ERECTION
(Complete)

LABOR		$ 37,772.20	
Add: 12% Payroll Tax	$ 4,532.66		
15% 6th day	5,665.83		
2.5% Vacation	944.31		
1.75% Hospital	661.01		
TOTAL LABOR			$ 49,576.01
MATERIALS			154,460.00
TOTAL CONCENTRATOR ERECTION COST			$ 204,036.01

McCRACKEN - CONCENTRATOR

ERECTION
(Complete)

PRIMARY & SECONDARY CRUSHING

	LABOR	MATERIALS	TOTAL
1. Hopper & Ore Bin FS040A	$ 1,414.40	$ 6,855.00	$ 8,269.40
2. Grizzly & Feeder FS025	104.80	2,580.00	2,684.80
3. Jaw Crusher FS030	1,104.80	7,035.00	8,139.80
4. Cone Crusher FS060	619.20	7,255.00	7,874.20
5. Transfer Belts FS070,050, A & B	570.80	1,051.00	1,621.80
6. Dust System, Skirt Boards, Muck Transfers	908.80	1,060.00	1,968.80
7. Screen & Magnet FS052 & 055	336.40	455.00	791.40
8. Fine Ore Bin FS080	5,072.00	9,000.00	14,072.00
9. Electrical	960.00	800.00	1,760.00
10. Plumbing	700.00	400.00	1,100.00

GRINDING, CLASSIFICATION & THICKENING

1. Slot Feeders FS080-080B FS100-105	4,632.00	3,278.00	7,910.00
2. Mill Scale FS115, Delivery Belt FS110, Muck Transfer & Skirt Boards	1,063.40	1,330.00	2,393.40
3. Grinding (Ball Mill, Bearings, Gears, Clutch, Motor, Liners, Scoop Box & Discharge)	786.00	16,098.00	16,884.00
4. Classification (Sump & Sump Pump, Hydroclones, Tower housing, Slurry piping)	419.20	170.00	589.20
5. Thickening (Tank, Pump, Slurry, Tank footings)	366.80	6,460.00	6,826.80

McCRACKEN - CONCENTRATOR

ERECTION

FLOTATION

	LABOR	MATERIALS	TOTAL
1. Conditioners			
(a) 8' x 8'			
(b) 10' x 10'	$ 157.20	$ 415.00	$ 572.20
2. Flotation Machines	1,467.20	1,628.00	3,095.20
(a) Plumbing			
(b) Blower	524.00	180.00	704.00
3. Pumps FS218,230,240,260,270, 285,298,505,855,859,860			
(a) Piping (b) Tanks	288.20	1,015.00	1,303.20
4. Electrical (Motors)	900.00	300.00	1,200.00

REAGENT MIXING, FEEDING, INSTRUMENTATION & SAMPLING

1. Mix Tanks FS905-912	262.00	110.00	372.00
(a) Mixers		400.00	400.00
2. Pumps FS203	26.20	95.00	121.20
3. Steady Head Tank FS935-941	262.00	150.00	412.00
4. Rotometers (feeders)		300.00	300.00
5. Density Control FS890	104.80	65.00	169.80
(a) Rotometer		225.00	225.00
(b) Plumbing	350.00	90.00	440.00
(c) pH regulator	200.00	150.00	350.00
(d) Electrical	450.00	500.00	950.00
* (e) Scales at mill feed integrator			
(f) Sampling	131.00	150.00	281.00

CONCENTRATE THICKENING & FILTRATION

	733.60	850.00	1,583.60
1. Filter FS435-460	262.00	630.00	892.00
2. Vacuum Pump FS505	26.20	140.00	166.20

* This instrument's cost has not been fully ascertained.

McCRACKEN - CONCENTRATOR

ERECTION

CONCENTRATE THICKENING & FILTRATION, CONT'D

	LABOR	MATERIALS	TOTAL
3. Compressor		$ 1,200.00	$ 1,200.00
4. Plumbing	150.00	50.00	200.00
5. Electrical (motors)	600.00	300.00	900.00
6. Truck Scales FS880	463.20	4,305.00	4,768.20
CRUSHER BUILDING			
1. Excavations Contract at $5.00 yd.		11,350.00	11,350.00
2. Footings & floors Contract at $120 yd.		4,000.00	4,000.00
3. Steelwork (erection)	2,620.00	2,800.00	5,420.00
4. Electrical		4,500.00	4,500.00
5. Plumbing		2,200.00	2,200.00
6. Crane (bridge)	262.00	260.00	522.00
MILL BUILDING			
1. Excavations Contract at $5.00 yd.		13,450.00	13.450.00
2. Footings and floors Contract at $120 yd.		18,000.00	18,000.00
3. Steelwork (erection)	7,074.00	4,800.00	11,874.00
4. Electrical		8,225.00	8,225.00
5. Plumbing & Sanitation		5,000.00	5,000.00
6. Cranes (3 Crawls, purchase)	1,400.00	1,200.00	2,600.00
FINE ORE COVER			
1. 14' x 24' x 12' Contract		1,600.00	1,600.00
TOTALS	$37,772.20	$ 154,460.00	$192,232.20

SCHEDULE NO. IV

POWER PLANT & ASSAY LAB

SCOPE OF WORK: To provide adequate power for all uses; both operational and emergency at mill site, camp facilities and all other areas where required. This plant is to be acquired on a lease purchase plan as shown in Schedule No. XI at the option of buyer.

To provide a lab building suitable for owners to equip for necessary mill and mine operations.

POWER PLANT FUEL OPTIONS

Electric power for the McCracken Mill and Campsite will quite likely have to be generated on site because of the remoteness of the area from any available line power. There is a 69,000V transmission line about 3 miles south of the property but it is currently loaded to capacity and no tap is possible. Citizens Utility Co. has been contacted and they are studying the situation to see if there is any way they can bring line power to the mine site without costs that would preclude its consideration.

The two alternatives for generating would be to use either natural gas or diesel engines. Southern Union Gas Co. has a pipeline running about four miles north of the minesite which can be tapped and extended to McCracken. The costs and methods of gas service are outlined in the correspondence from Southern Union (see Schedule V) and evaluated in following paragraphs:

GAS CONSUMPTION & COSTS

Assuming typical engines to be 3 Caterpillar G-399 natural gas engines developing 1050 HP at a full generating load of 700 KW each.

Then: $$3 \times 1050 \text{ HP} \times 2545 \frac{\text{BTU}}{\text{HP-hr}} \times 720 \frac{\text{hr.}}{\text{mo.}} = 5760 \frac{\text{MMBTU}}{\text{MO.}}$$

At 75% load:

$$5760 \frac{\text{MMBTU}}{\text{MO.}} \times .75 = 4320 \text{ MMBTU/MO.}$$

Then it would appear that a monthly consumption for the generating plant and campsite would be about 4500 MMBTU or (assuming a minimum BTU content for the gas of 900 BTU per cubic foot), 5000 MCF.

With these figures in mind, then it would not be logical to consider proposals one, two and four in Southern Union's letter of December 6, 1968 because of the minimum purchase obligations. As further outlined in Southern Union's letter of December 10, 1968, if consumption of gas ever did reach the minimums necessary to take advantage of the special contract rate, Schedule H4, the client could convert to this schedule.

Natural gas costs as outlined in Southern Union's possibility No. 3 would then be:

Construction Contribution	$40,000.00
Gas Per Year	
$5000 \frac{MCF}{MO.} \times \frac{12\ MO.}{YR.} \times \frac{\$0.4464}{MCF} =$	$26,784.00
Total to end of year #1	$66,784.00
Total to end of year #2	93,568.00
Total to end of year #3	120,352.00

DIESEL CONSUMPTION & COSTS

Assuming typical engines to be 3 Caterpillar D-399 diesel engines developing 1050 HP at a full generating load of 700 KW each, then:

$$3 \times 1050\ HP \times 2545 \frac{BTU}{HP\text{-}HR} \times 720 \frac{HR}{MO} = 5760\ MMBTU/Mo$$

at 75% load:

$$5760 \frac{MMBTU}{MO} \times .75 = 4320\ MMBTU$$

or:

including campsite and miscellaneous usage, round to 4500 MMBTU

Assume:

Diesel fuel provides 19,500 BTU/lb.
7.12 lb/gal

Then:

$$4500\ MMBTU \times \frac{1\ lb}{19500\ BTU} \times \frac{1\ gal}{7.12\ lb} = 32{,}400\ gal/mo.$$

Diesel oil delivered to site will cost about 13¢/gal.

Diesel per year:

$$32{,}400 \frac{gal}{mo.} \times \frac{12\ mo}{yr} \times \frac{\$0.13}{gal} = \$\ 50{,}500.00$$

Total to end of year #1 = $ 50,500.00

Total to end of year #2 = 101,000.00

Total to end of year #3 = 151,500.00

The above comparison of costs show that only a life of less than two years would make diesel competitive with natural gas as a source of

motive energy for the electrical generators. After that period the power unit cost of gas overrides the initial $40,000 pipeline cost.

One other possibility considered to avoid the $40,000 construction contribution was to erect the power plant at the existing pipeline and install a power line to the mill site. This idea was investigated and rejected because of excessive costs involved.

Conclusions:

It appears that providing Southern Union Gas Co. with a $40,000 construction contribution and then purchasing gas from them on the Arizona General Service Rate Schedule No. 1 would be the most economical means of generating electrical power at this time.

SUMMARY

POWER PLANT & LAB BUILDING

DESCRIPTION	LABOR	MATERIAL	TOTAL
Power Plant	$ 7,930.00	$ 84,725.00	$ 92,655.00
Lab Building	5,055.00	5,625.00	10,680.00
TOTALS	$ 12,985.00	$ 90,350.00	$ 103,335.00

SUMMARY

POWER PLANT

DESCRIPTION	LABOR	MATERIAL	TOTAL
Building and Erection	$ 7,930.00	$ 9,125.00	$ 17,055.00
Monthly Lease/Purchase for 7 months including 1st and last month payments (refer to Schedule No. 4)		75,600.00	75,600.00
TOTALS	$ 7,930.00	$ 84,725.00	$ 92,655.00

McCRACKEN

GENERATING SYSTEM

QUANTITY	DESCRIPTION	WEIGHT	COST
3	G399 Caterpillar Electric Set; 10:1 compression ratio, 60 cycle 3 phase, 1200 RPM, 600 KW, 230/460 volts	68,670#	
3	Switch gear (voltmeter, ampmeter, ampmeter phase selection switch, Kilowatt meter, master bus, master bus breaker switch, frequency meter, synchronizing group)		
3	Donaclone air cleaner	300#	
3	Radiators	10,500#	
3	Mufflers	1,770#	
3	Electric starting - 32 volt	750#	
3	Battery sets	1,485#	
3	Battery Chargers	36#	
3	Cranking Panels	42#	
3	Safety shutoffs (oil pressure and water temperature)	24#	
3	Safety shutoffs (overspeed)	6#	
3	Four alarm lights	3#	
	F. O. B. JOB SITE	83,586#	$ 202,794.00

Quotation from Wheeler Machinery Co.; Salt Lake City, Utah

POWER PLANT BUILDING

DESCRIPTION	LABOR	MATERIALS	TOTAL
Concrete	$ 2,135.00	$ 1,725.00	$ 3,860.00
Metal Bldg. & Erection	720.00	2,100.00	2,820.00
Electrical & Plumbing	2,200.00	1,800.00	4,000.00
Generating System Distribution	2,875.00	3,500.00	6,375.00
TOTALS	$ 7,930.00	$ 9,125.00	$ 17,055.00

Lakeside Engineering Company, Inc.

ASSAY LAB BUILDING

DESCRIPTION	LABOR	MATERIAL	TOTAL
Concrete	$ 2,135.00	$ 1,725.00	$ 3,860.00
Metal Bldg. & Erection	720.00	2,100.00	2,820.00
Electrical & Plumbing	2,200.00	1,800.00	4,000.00
TOTALS	$ 5,055.00	$ 5,625.00	$ 10,680.00

SCHEDULE NO. V

WATER SUPPLY & NATURAL GAS SUPPLY

SCOPE OF WORK: To provide adequate water necessary for all uses as described in memo to Roy Hickman outlining water requirements. All computations used were based on pre-determined water well site selected by owners.

Natural gas requirements are to provide all uses necessary for all camp and plant functions. Cost of this service is based upon direct quotation from Southern Union Gas Company on a customer contribution basis.

Lakeside Engineering Company, Inc.

November 11, 1968

MEMO TO: Roy Hickman

FROM: Jim Lower

SUBJECT: Pumping Water at McCracken

The pipe line construction from the Magnum water well situated in Section 17, Township 13N, Range 15W, Mohave County, Arizona to the mine plant is commented on as follows:

As a base map, the U. S. G. S. 15 minute Castaneda Hills Quadrangle, Arizona, map was used. Two possible pipe line locations are being considered in the subsequent paragraphs. This report is for estimating purposes and will be surveyed before finalizing the route.

The first will be called Route I and the second, Route II. Drawings MCCM 200-10 and MCCM 98 designate these locations.

The direct, or Route I, will use less pipe but any savings in pipe will be offset by increased hand labor. This route has a total distance of approximately 4.7 miles and would be normal to the contour.

Route No. II uses approximately 27,456 feet of pipe or 5.2 miles but seems to offer the best approach. A blazed 'dozer trail would be laid out then a trench cut to bury the pipe. Elevation will rise from 2,080 feet at the well collar to 2,900 feet at the millsite. The well is 1100 feet deep.

In calling for pump bids, we asked for a 200 GPM delivery, 1,000 feet head for the submersible and 1,000 feet head on the booster turbine pump. The bidders stated their pipe requirements in the well.

The main pipe line has a head of 820 feet at 200 GPM. If 27,456 feet of pipe is required, carrying a 200 GPM flow; a head loss of .00584 feet/100 may be expected on a 6" line. Velocity will be 2.22 feet per second.

Friction Head = 27,456 x .00584 = 160 feet

Friction Head Loss = 160 x .433 = 64 PSI

Pipe head = 820 feet x .433 = 355 PSI

or, pressure at well equals 424 PSI pump head on turbine booster pump.

Four inch diameter pipe does not meet the above requirements. Five inch pipe is adequate but is not standard thus is precluded by its cost. Accordingly, six inch pipe has been selected.

After consulting several suppliers, we have decided to use random lengths

6" outside diameter, 0.134" wall with #670 Victaulic fittings. The pipe would be in random 60 foot lengths and will have a coupling every 60 feet. This pipe is capable of working to 800 PSI.

In Schedule No. 5, Page No. 2; it will be noted three alternates are offered for power to the pumps.

The first alternate uses 3 conductors and ground from the mine power to the pump source buried with the pipe line. This alternate seemed more desirable by the pump manufacturer's representatives. They claim it has a better flexibility for controls.

After close estimating of cable cost (27,000 feet of 3 conductor No. 2 wire), the first alternate has been abandoned in favor of one of the other three options which require a generator of sufficient capacity to start and run a total of 175 HP at the well. A 250 KVA Diesel generator will be rented until the gas line is extended, then a rental purchase contract will be drawn for a natural gas unit. Safety switches will be placed on the power unit so that it will monitor all the functions of the pump and engine. A warning device at the plant tank will alert the personnel of trouble.

The well should be equipped as soon as possible. Design is for a continuous well operation.

J. Lower

Lakeside Engineering Company, Inc.

November 29, 1968

MEMO TO: Roy Hickman

FROM: Jim Lower

SUBJECT: Estimated Water Requirements at McCracken

Water consumption at the mine is based on 24 hour use reduced to gallons per minute. Also included in this report is a paragraph on water reclamation and finally, a summary of water consumption. This report covers three phases of anticipated water use: (I) Mill (II) Culinary (III) Miscellaneous.

MILL WATER

Water requirements are based on a 750 ton per day operation or 1,040 lbs/minute. Natural moisture in the mill feed is nil so may be disregarded. Pulp in the mill will be controlled at about 33% solids (by weight).

A gallon of water, for practical purposes, weighs 8.3 lbs. and for simplicity, will be used in this calculation.

Therefore: (a) $\frac{1040 \text{ lb/min}}{8.3 \text{ lb/gal}} = 124.6$ GPM Feed

(b) 124.6 GPM x 3 (66%) = 374 GPM

Mill will require 374 GPM water.

CULINARY WATER

Municipal water evaluations allow 200 gallons a day for a family of four. To derive a reasonable figure; 30 will be the multiplier or, 30 x 200 =

$$\frac{6{,}000 \text{ GPD}}{1{,}441 \text{ Min}} = 4.1 \text{ GPM}$$

A figure of 5 GPM should probably be used for culinary water.

MISCELLANEOUS USES

This includes stock watering, washing floors, mine plant buildings and leaks. Allow 10 GPM for these items.

RECLAMATION

The proposed salvage of water from the tailing pond would be through the use of movable cyclones (hydroclones) at the pond face. Inlet pressure for the cyclones will be generated through tailing line drop from the mill.

Sand or underflow will be placed directly in the vicinity of the cyclones while the overflow or water and slimes, will be piped to the pond's opposite end. After settling, clarified water will go through a decant line to a pump intake where it will be pumped to the mill head tank.

Pumps and cyclones (hydroclones) are available from the CWT inventory.

Water loss, including evaporation, should be at a maximum of 25% or 374 GPM x .25 or 93.5 GPM loss at mill.

Presently, culinary water must be classified as a loss due to the use of detergents. It might be feasible to find methods of preparing this water for mill use.

Miscellaneous losses, of course, are not recoverable.

SUMMARY OF WATER

WATER CONSUMED		WATER RECLAIMED	
Mill	374 GPM	Mill Tailing Pond	280 GPM
Culinary	5 GPM	Culinary	0 GPM
Miscellaneous	10 GPM	Miscellaneous	0 GPM
Total	389 GPM	Total	280 GPM

Required make-up water from well = 389 GPM
- 280 GPM

Total Make-up Water 109 GPM

A supply of 109 GPM is the indicated fresh well water requirements. For pipe line and pump calculations, a minimum of 150-200 GPM is being used, depending on the water well potential.

J. Lower

J. Lower

SUMMARY WATER DISTRIBUTION

LABOR	MATERIAL	TOTAL
$ 7,524.00	$ 117,376.00	$ 124,900.00

McCRACKEN

WATER DISTRIBUTION

DESCRIPTION	SUPPLIER	COST	2nd ALTERNATE	3rd ALTERNATE	4th ALTERNATE
1 Submersible Pump 100 HP Starter, Panel & Transformer	Byron-Jackson	$ 15,000.00			
2 Booster Turbine 75 HP	Byron-Jackson	4,575.00			
1100' 4" Pipe in well	Crane	2,650.00			
		23,225.00			
26,400 LF 6" Pipe .134 wall 670 Victaulic fittings, 100 bends, F.O.B. Geneva, Utah	Intermountain Pipe	59,156.00			
Freight		1,800.00			
2 6" 250# Gate Valves	Crane	420.00			
2 6" Check Valves		680.00			
Victaulic Fittings, 6" assort.	Cohn	275.00			
Victaulic Couplings 6" & 4"	Cohn	265.00			
2 Altitude Valves, Hytrol 6"	Clayton	700.00			
1 Mill Tank 30' x 20'	Decco	3,865.00			
2 Stock Tank Valves		350.00			
1 Domestic Tank 20' x 20'	Decco	2,995.00			
26,400' Trench & Bury		7,000.00			
Pipe Labor (12 ms at $26.20)		314.40			

Lakeside Engineering Company, Inc.

McCRACKEN

WATER DISTRIBUTION

DESCRIPTION	SUPPLIER	COST	2nd ALTERNATE	3rd ALTERNATE	4th ALTERNATE
Tank Labor (8 ms at $26.20)		$ 209.60			
Automatic Power Shutoff (Safety)		645.00			
SUB-TOTAL		$ 100,900.00			
Wire from Mine, Alternate 3 Single Cond. No. 2 Wire for bury 79,200' at 50¢	Machinery Ctr.	39,600.00			
6 Transformers for above at $350.00 each	Machinery Ctr.	2,100.00			
5 Miles Ground Wire #12	Machinery Ctr.	3,640.00			
TOTAL (1st Alternate)		$ 145,240.00			
Gas Burning Generator 250 KVA	Waukesha Phone Estimate		$ 24,000.00		
TOTAL (2nd Alternate)			$124,900.00		
Diesel Set				$ 28,500.00	
TOTAL (3rd Alternate)				$129,400.00	
Used Set, Rebuilt (Diesel)					$ 14,000.00
TOTAL (4th Alternate)					$114,900.00

Lakeside Engineering Company, Inc.

SOUTHERN UNION GAS COMPANY
FIDELITY UNION TOWER • DALLAS, TEXAS 75201

December 6, 1968

Mr. Jim Lower
Lakeside Engineering Company, Inc.
1549 South 11th East
Salt Lake City, Utah 84105

Dear Mr. Lower:

To confirm our telephone conversation of December 6, 1968, the following are the four possibilities we discussed to determine the rate for natural gas service for the Magnum project at the McCracken mine in Arizona.

1. The customer would make a contribution in aid of construction in the approximate amount of $10,000 to Southern Union Gas Company and negotiate a five year contract and purchase gas under Special Contract Rate Schedule H4 which calls for a minimum monthly purchase obligation of 10,000 MMBTU per month. A copy of rate schedule H4 is attached.

2. The customer would make a contribution in aid of construction in the approximate amount of $40,000, negotiate a one year contract with Southern Union Gas Company and purchase gas under Special Contract Rate Schedule H4.

3. Customer would make a contribution in the amount of $40,000 to Southern Union Gas Company, have no minimum purchase obligation and purchase all gas under Arizona's General Service Rate Schedule 1, a copy of which is attached.

4. The customer would agree to a minimum annual purchase obligation in excess of 150,000 MMBTU, a five year contract similar to H4 and no contribution.

These are offered only as suggested approaches to determine which rate would be most advantageous to your client and are not tendered as firm rate quotations. When you have made a determination of the approach which will best fit your client's needs we will proceed with a firm proposal.

Yours very truly,

B. R. Knox
Industrial Manager

BRK:jr
Attachments
cc: Mr. C. A. Stockhoff
Mr. J. O. Carnes

SOUTHERN UNION GAS COMPANY
FIDELITY UNION TOWER • DALLAS, TEXAS 75201

December 10, 1968

Mr. Dave Rovig
Lakeside Engineering Company, Inc.
1549 South 11th East
Salt Lake City, Utah 84105

Dear Mr. Rovig:

In answer to your questions during our telephone conversation of December 9, 1968, we are proposing the following alternative as a means of extending gas service to your client's facilities at the McCracken Mine in Arizona.

The client would make a contribution in aid of construction in the approximate amount of $40,000 and would purchase all his natural gas requirements on the Arizona General Service Rate Schedule 1 with an option that at anytime he so chose he could request to be placed on the Arizona Special Contract Rate Schedule H4 with a minimum purchase obligation of 10,000 MMBTU per month and should he at anytime agree to a five year contract based on the requirement of H4, Southern Union Gas Company would refund the original contribution.

We hope that this approach meets with the approval of you and your client since we are eager to work with you in every way possible to extend service to this location.

Yours truly,

B. R. Knox
Industrial Manager

BRK:jr
cc: Mr. C. A. Stockhoff
Mr. J. O. Carnes

SERVICE AREA
Arizona District

BILLING CODE
1

GENERAL METERED SERVICE

APPLICABILITY

Applicable to all classes of gas service not otherwise specifically provide for.

TERRITORY

All service areas in State of Arizona not otherwise specifically provided for.

AVAILABILITY

To persons accessible to the Company's installed facilities and to designated main line consumers provided for in Section 18 of the Company's regulations on file with A.C.C.

RATE

First	1	MCF	per	month	@	$1.8964	
Next	3	"	"	"	@	.9064	per MCF
Next	22	"	"	"	@	.7864	" "
Next	24	"	"	"	@	.6664	" "
Next	100	"	"	"	@	.5664	" "
All Over	150	"	"	"	@	.4464	" "

Minimum Charge: $0.80 per month per customer.

Subject to increase or decrease in each MCF by the amount of any increase(s) or decrease(s) subsequent to January 1, 1968, in the price per MCF paid by the Company for gas purchased, with correction for pressure base; plus, in any case, the applicable proportionate part of any taxes or governmental impositions which are assessed on the basis of the gross revenues of the Company in Arizona and/or the price of or revenue from the gas or service sold and/or the volume of gas purchased for sale or sold hereunder.

CONDITIONS

This rate is net and not subject to penalties or discounts.

MINIMUM B.T.U. CONTENT

900 BTU per cubic foot, when measured at a pressure of 14.9 lbs. per square inch absolute and a temperature of 60°F.

SERVICE AREA
Arizona Disctrict

BILLING CODE
H4

SPECIAL CONTRACT RATE

APPLICABILITY

Applicable to large volume customers not otherwise specifically provided for who execute a contract for a term of not less than twelve months.

TERRITORY

All comunitites being served in the Arizona counties of Apache, Navajo, Coconino, Yavapai and Mohave; also authorized taps on the Company's mainlines or the Company's supplier's mainlines in such counties.

RATE

First 10,000 MMBTU per month at 42.94¢ per MMBTU
Excess @ 35.44¢ per MMBTU

Monthly Minimum Purchase Obligation: 10,000 MMBTU per month.

Cost of Gas Adjustment: The above rates are predicated upon a base cost of 30.77¢ per MCF at 14.73 psia, 60°F., for gas purchased by Southern Union for delivery to the customer. Whenever such cost of purchased gas is more or less than said base cost, the foregoing rates shall be increased or decreased, as the case may be, with appropriate correction for BTU content, by an amount per MMBTU equal to the difference between the cost of purchased gas and said base cost. The correction for BTU content will be made by adjusting such MCF cost difference to a MMBTU basis using the average dry BTU content of the gas received from the supplier during the immediately preceding twelve month period.

Taxes: It is expressly agreed that Buyer will bear the burden of all taxes payable by Seller under Section 42-1301 et seq., A.R.S. (or any amendatory, superseding or additional statute of the same nature) and any new, additional or increased taxes, licenses, fees or charges levied, assessed or made by any governmental agency (other than ad valorem, income taxes, franchise or capital stock taxes, social security, workmen's compensation or unemployment compensation) imposed upon Seller in the production, purchase, transportation, sale or consumption of natural gas or on any similar basis, upon the natural gas sold to Buyer, which will result in an increase in the cost to Seller of gas sold to Buyer. Such taxes will be borne by Buyer as an addition to the rate herein set out.

CONDITIONS

1. Subject in all respects to provisions of covering contract and applicable laws, regulations from time to time in effect.

NATURAL GAS SUPPLY

Customer's contribution as per letter from Southern Union Gas Company

$ 40,000.00

SCHEDULE NO. VI

ROAD BUILDING

SCOPE OF WORK: To construct an access road from county road to mill site, sufficient to handle all uses necessary for mill and camp operations. Early construction of road is planned to provide necessary access for mill site preparation, concrete constructions, hauling of CWT machinery etc. All road equipment necessary, whether rental or purchase, shall be acquired at this time.

Lakeside Engineering Company, Inc.

SUMMARY

ACCESS ROAD TO CAMP - McCRACKEN

LABOR	MATERIALS	TOTAL
$ 7,060.00	$ 13,172.00	$ 20,232.00

ACCESS ROAD TO CAMP (APPROX. 4.3 MILES)

EQUIPMENT & OPERATORS	TOTALS
1. D-8 Cat, 30 days @ $3,536.00/month	$ 3,536.00
2. D-9 Cat, 14 days @ $280.00/day	3,920.00
3. Airtrack 5" Drill 14 days @ $220.00/day	3,080.00
4. Grader, 45 days @ $120.00/day	5,400.00
SUB TOTAL	$ 15,936.00
MISC. BLASTING SUPPLIES:	
1. Blasting Powder/Prills	$ 2,250.00
2. Blasting Caps	450.00
SUB TOTAL	2,700.00
Engineering & Surveying	985.00
Labor	611.00
SUB TOTAL	$ 1,596.00
TOTAL	$ 20,232.00

SCHEDULE NO. VII

SHOP, WAREHOUSE, OFFICE

SCOPE OF WORK: To construct under one roof for efficient operation; an office, shop and warehouse building for use in the mine and mill operations. Construction shall begin after erection of mill has begun in order to coordinate best use of wood materials left from construction of concrete structures.

SUMMARY

OFFICE, SHOP & WAREHOUSE

DESCRIPTION	LABOR	MATERIALS & CONTRACT	TOTAL
1. Earthwork		$ 2,800.00	$ 2,800.00
2. Concrete	8,616.70	11,283.30	19,900.00
3. Masonry		9,483.00	9,483.00
4. Roof	7,582.00	7,532.00	15,114.00
5. Doors & Windows	696.00	1,820.00	2,516.00
6. Heating & Air		3,000.00	3,000.00
7. Finish & Paint		3,085.00	3,085.00
8. Electrical		2,500.00	2,500.00
9. Plumbing		2,250.00	2,250.00
10. Sewer & Water Service		10,500.00	10,500.00
TOTALS	$ 16,894.70	$ 54,253.30	$ 71,148.00

McCRACKEN

OFFICE, SHOP & WAREHOUSE

DESCRIPTION	QUANTITY	UNIT	LABOR	MATERIALS	TOTAL
1. Earthwork	560	CY		$ 2,800.00	$ 2,800.00
2. Concrete:					
Footings	48	CY	2,078.40	2,721.60	4,800.00
Foundations	12	CY	519.60	680.40	1,200.00
Slabs	139	CY	6,018.70	7,881.30	13,900.00
Totals	199		$8,616.70	$11,283.30	$19,900.00
3. Masonry 8"	496	LF @ $15		7,440.00	7,440.00
Masonry 6"	227	LF @ $9		2,043.00	2,043.00
Totals				$9,483.00	$9,483.00
4. Roof:					
Trusses	170	Each	5,950.00	5,100.00	11,050.00
Sheeting	8,600	SF	946.00	1,419.00	2,365.00
Blocking	170	LF	170.00	153.00	323.00
Covering	8,600	SF	516.00	860.00	1,376.00
Totals			$ 7,582.00	$7,532.00	$15,144.00
5. Door & Windows					
Doors Int.	12	Each	240.00	710.00	950.00
Doors Ext.	4	Each	420.00	600.00	1,020.00
Windows	12	Each	36.00	510.00	546.00
Totals			$ 696.00	$1,820.00	$2,516.00

SCHEDULE NO. VIII

TRAILER AND PERMANENT HOUSING

SCOPE OF WORK: To provide temporary as well as permanent housing for construction and mill/mining personnel. Work on the trailer site will begin with work on the access road to provide parking for construction trailers. The first phase of the trailer camp provides facilities for twelve trailers only with provisions for expansion as needed.

Permanent housing construction will begin later to take advantage of material left from forming material and mill erection.

Lakeside Engineering Company, Inc.

SUMMARY

TRAILER HOUSING

LABOR	MATERIALS	TOTALS
$ 11,650.00	$ 38,116.00	$ 51,766.00

McCRACKEN

TRAILER HOUSING

DESCRIPTION	COST
12 Trailer Houses, Rental Purchase, 7 months	$ 17,701.00
1 Company owned Trailer Remodeled into Cooking Trailer for Single Personnel	2,500.00
Grade	600.00
Gravel	400.00
Sewer & Plumbing	20,940.00
Washroom & Laundry	1,800.00
Building	1,300.00
Electric:	
Transformer	350.00
Wire and Work	3,600.00
Porch and Cover	2,575.00
TOTAL	$ 51,766.00

TRAILER HOUSING

DESCRIPTION	MISC. COSTS	TRAILER COSTS
6 Model No. RS - 44TIC "Rembrandt" 2 Bedroom Mobile Homes w/30 Gal. W. H. Inc. Interest		$ 26,670.00
6 Model No. R - 50T2CFBR "Rembrandt" 2 Bedroom Inc. Interest		28,400.00
4% Sales Tax	$ 2,202.80	
Property Tax & License, 2 years	2,160.00	
Insurance 2 Years	1,256.32	
SUB TOTAL	$ 5,619.12	$ 55,070.00
TOTAL 2 YEARS	$ 60,689.12	

SUMMARY

PERMANENT HOUSING

DESCRIPTION	EACH	TOTAL
3 Houses	$ 11,900.11	$ 35,700.33
Water and Sewer		25,000.00
TOTAL		$ 60,700.33

PERMANENT HOUSING

DESCRIPTION	LABOR	CONTRACT & MATERIAL	TOTAL
Excavation and Grade		$ 200.00	$ 200.00
Concrete	768.00	927.20	1,695.20
Framing and Finish	910.00	2,020.00	2,930.00
Masonry		1,443.90	1,443.90
Plumbing		1,000.00	1,000.00
Electrical		450.00	450.00
Insulation		80.00	80.00
Windows		449.11	449.11
Floor Coverings		522.00	522.00
Cabinets and Appliances		689.90	689.90
Roofing		420.00	420.00
Painting		550.00	550.00
Heating and Air Conditioning		590.00	590.00
Dry Wall		880.00	880.00
TOTALS	$ 1,678.00	$ 10,222.11	$ 11,900.11
Water and Sewer Lines Depending on Location, Maximum Estimate		$ 25,000.00	$ 25,000.00

SCHEDULE NO. IX

SHOP TOOLS & EQUIPMENT

MONTHLY RENTAL EQUIPMENT

SCOPE OF WORK: Includes a list of miscellaneous equipment necessary for construction not covered in other sections . Also tools and equipment as a basic inventory for operation of warehouse and shop.

McCRACKEN

SHOP TOOLS & EQUIPMENT

DESCRIPTION	SUPPLIER	COST
1 Metal Lathe, Used	McMasters-Carr	$ 1,800.00
1 Post Drill (Shop)		1,400.00
1 Anvil		150.00
1 Press (Power)		675.00
1 Power Hack Saw (Band)		1,800.00
1 Forge		250.00
2 Vise		500.00
1 Porta Power		339.00
3 Coffin Hoists		478.00
1 Keyway Cutter		675.00
1 Radial Saw		975.00
2 Bench Grinders		225.00
Tools, Hand shovels, Wrenches, Axes, Tap & Dies, Saws, Squares and others too numerous to list here	Industrial Supply	14,680.00
Shop Jib Crane	McMasters-Carr	6,750.00
TOTAL		$ 30,697.00

Lakeside Engineering Company, Inc.

MONTHLY RENTAL EQUIPMENT

NO.	DESCRIPTION	EACH	MONTHLY RATE	TOTAL, END OF 7 MONTHS
2	2 1/2 Ton Job Trucks	$ 1,000.00	$ 2,000.00	$ 14,000.00
2	3/4 Ton Job Trucks OK	250.00	500.00	3,500.00
1	3/4 Ton Ford 4 WD Truck OK	350.00	350.00	2,450.00
1	Sedan OK	200.00	200.00	1,400.00
1	D-8 Tractor w/dozer and ripper	2,000.00	2,000.00	14,000.00
1	955 Traxcavator	1,250.00	1,250.00	8,750.00
4	400 Am. Portable Welders	200.00	800.00	5,600.00
1	125 KVA Cat. Diesel Generator w/transformer 440V/220V/110V	1,000.00	1,000.00	7,000.00
1	Air Track 5" Machine	950.00	950.00	6,650.00
1	Air Compressor 1200 CFM	1,200.00	1,200.00	8,400.00
1 Lot	Drill Supplies; Bits, Steel etc.	428.57	428.57	3,000.00
1	Backhoe Attachment for Front End Loader	300.00	300.00	2,100.00
	Fuel All Vehicles		500.00	3,500.00
	TOTALS	$ 9,128.57	$ 11,478.57	$ 80,350.00

SCHEDULE NO. X

SUPPLIES FOR WAREHOUSE, WELDING & SAFETY

SCOPE OF WORK: To inventory and use supplies in the general areas noted during construction and for use in mine and mill operations afterwards. The ambulance is to be a second-hand station wagon in excellent condition, fitted for emergency first aid use and used for this purpose only. A section of the general office area is also to be designated as a first aid area with complete first aid supplies inventoried at all times.

McCRACKEN

STEEL STOCK

WAREHOUSE SUPPLIES

DESCRIPTION	COST
Beam, Angles, Strap, Flat Plate, Rounds, Channel, Strips etc.	$ 1,060.00
Bolts, Washers, Screws Immediate Stock	1,180.00
Pipe for Shop, Assorted Sizes	950.00
Pipe Fittings	1,200.00
Fabricate Steel Rods	550.00
TOTAL	$ 4,940.00

McCRACKEN

WELDING SUPPLY

DESCRIPTION	SUPPLIER	COST
1 Gasoline 300 Amp. D.C.	Galigher Co.	$ 1,200.00
3 A.C. - D.C. 350	Galigher Co.	1,500.00
Cable 800/ft. ($130)	Galigher Co.	1,040.00
Rods, Hood, Clamp etc.	Galigher Co.	675.00
Oxygen-Acetylene - 4 Cutting Torch	Galigher Co.	824.00
1 Portable Flame Cutter	Galigher Co.	247.00
Accessories		245.00
1 Battery Charger	Galigher Co.	180.00
1 Grinder, Portable Electric	Galigher Co.	95.00
1 Dozen Wheels	Galigher Co.	28.00
1 Air Chipper & Extra Rods	Galigher Co.	48.00
TOTAL		$ 6,082.00

SAFETY EQUIPMENT & SUPPLIES

First Aid Room, General Supplies etc.	
Station Wagon Ambulance	$ 5,950.00

SCHEDULE NO. XI

TAILINGS POND

MONTHLY PURCHASE/RENTAL AGREEMENTS

SCOPE OF WORK: To construct a tailings pond large enough for anticipated mill operations. Every effort will be made to control costs by using existing ravines or washes with material for face to come from mining operations.

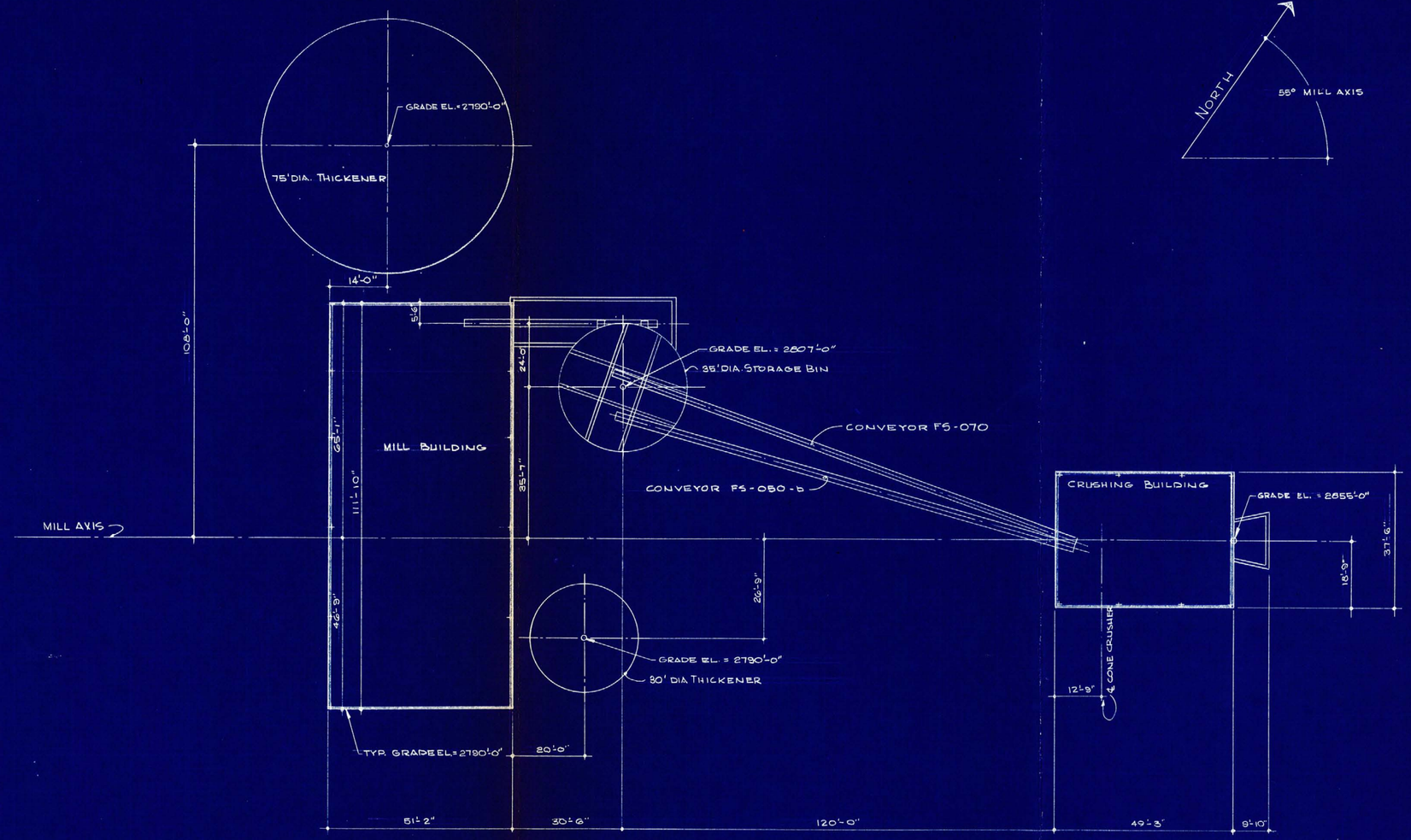
Included is a list of the monthly purchase/rental costs for power plant and trailer housing.

Lakeside Engineering Company, Inc.

DESCRIPTION	TOTAL PURCHASE PRICE	MONTHLY RENTAL PURCHASE COST	7 MONTH CAPITAL CHARGE	REMAINDER OF BALANCE @ 8th MO.	APPROX. EQUITY IN 7 MONTHS
A. 12 Trailer Houses Refer to Schedule No. VIII for cost inclusion	$ 60,689.12	$ 2,528.71	$ 17,701.00	$ 42,988.12	$ 15,951.00
B. Generating System Refer to Schedule No. IV for cost inclusion	$ 202,794.00	$ 9,450.00	$ 75,600.00	$ 136,644.00	$ 67,600.00

Purchase Price & Monthly Purchase Rental Agreements

MATERIAL LIST.				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF LAKESIDE ENGINEERING COMPANY, INC. AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: DRAWN: R.C.B. CHECKED APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

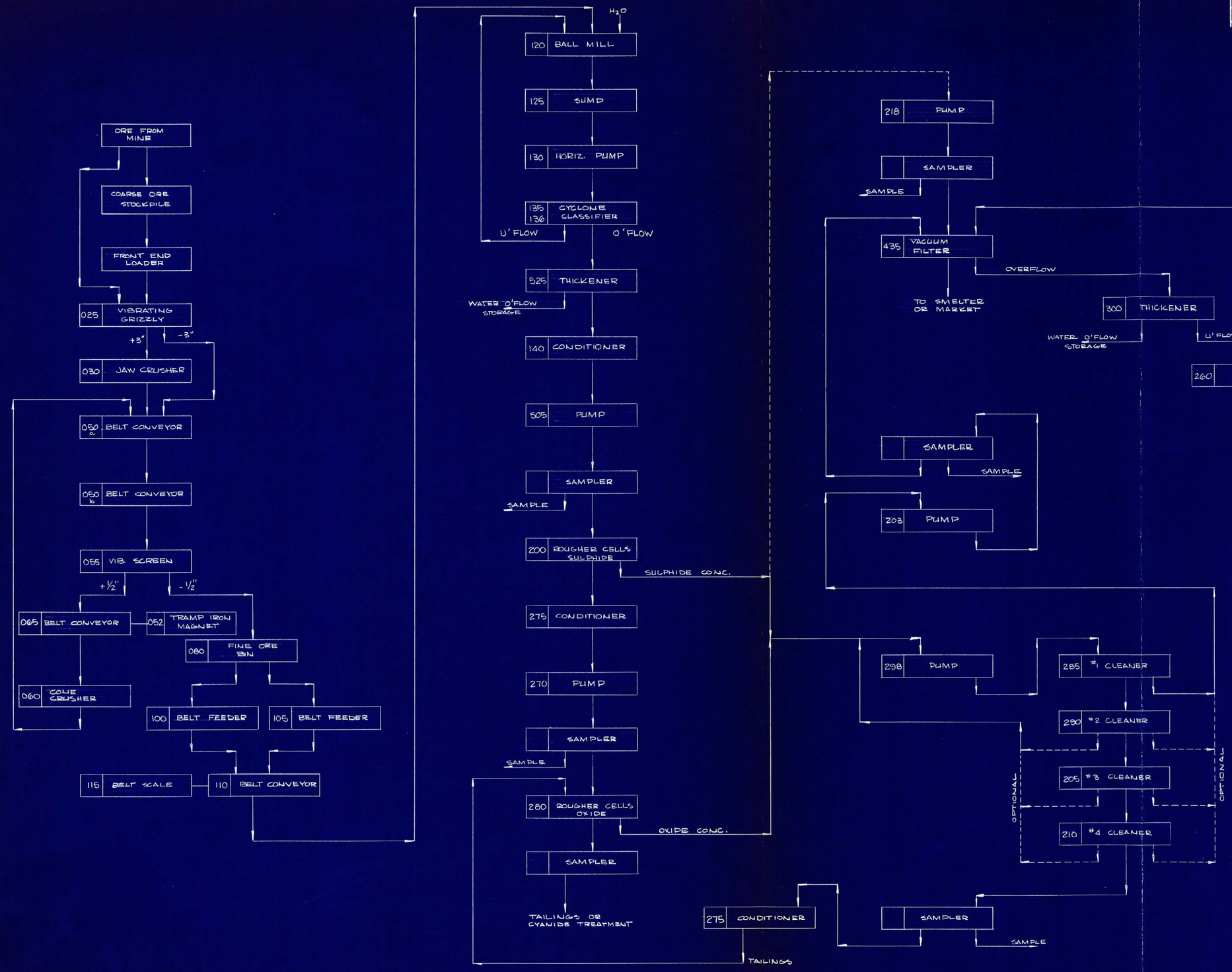
SCALE: 1/16" = 1'-0" DATE: 11 DEC. 08

TITLE: GEN'L. ARRANGEMENT BUILDING McCRACKEN MILL PROJECT

DWG. NO. MCCM-200.7 -B

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN:
DRAWN: RCB
CHECKED:
APPROVED:

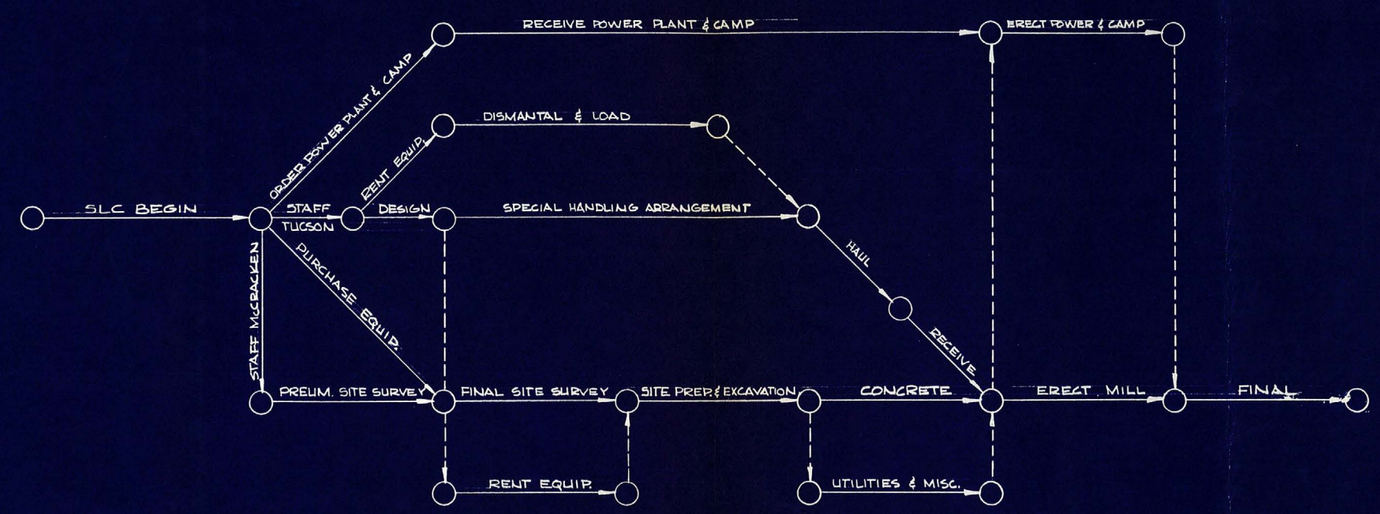
Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: NONE
DATE: 15-NOV 68

TITLE FLOW SHEET
McCRACKEN SILVER MINE

DWG. NO. MCCM-100-1

REFERENCE



McCRACKEN PROJECT PRELIMINARY UNIT OPERATIONS

(NO QUANTITIES, NO TIME)

No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: DBR
DRAWN: RGB
CHECKED
APPROVED:

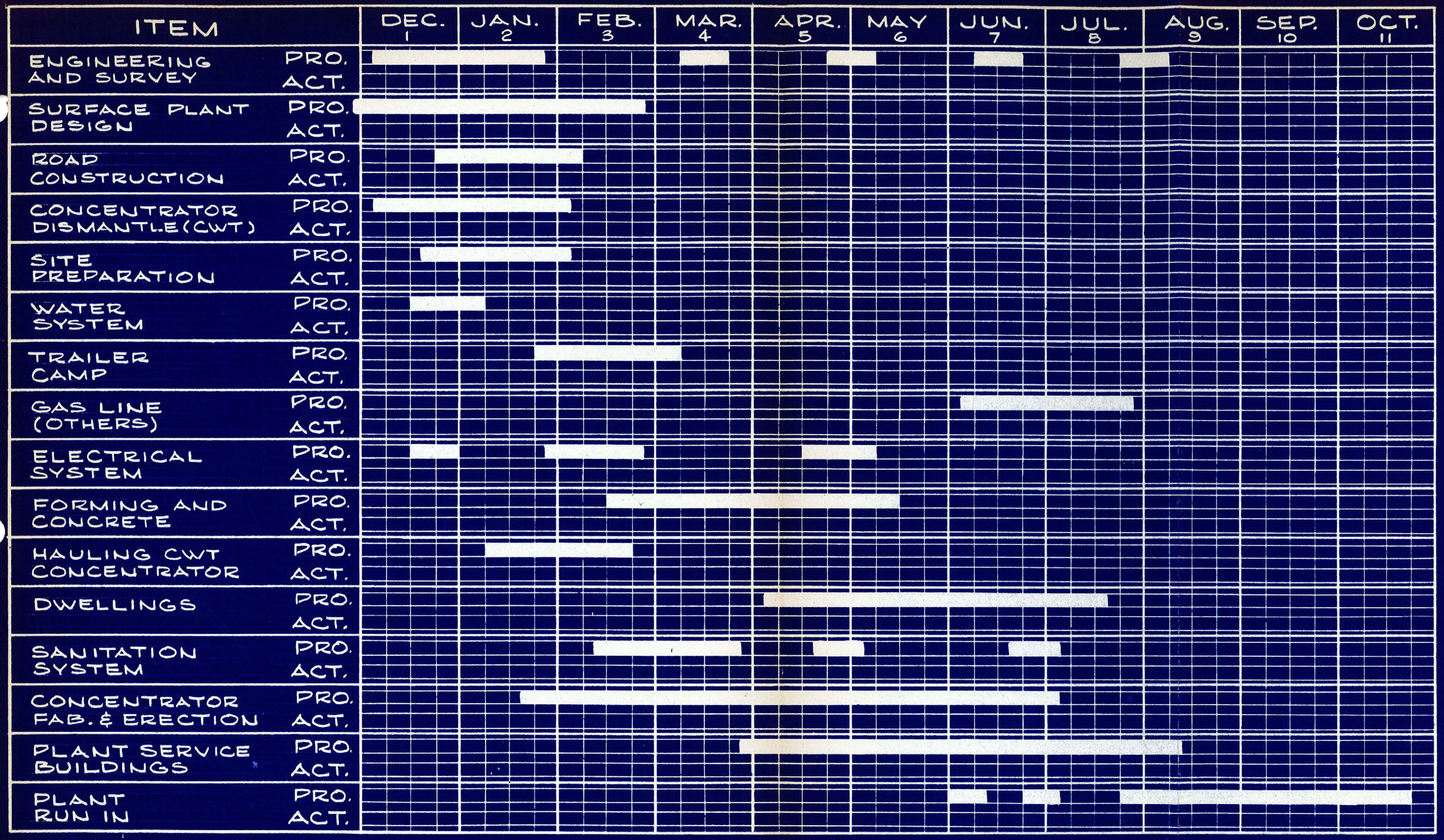
Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: NONE
DATE: 13 NOV. 68

TITLE: PRELIMINARY OPERATIONS
McCRACKEN SILVER MINE

DWG. NO. MCCM-100.10

REFERENCE



PRO. = PROJECTED TIME
ACT. = ACTUAL TIME

No.	DATE	REVISION

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DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: J.T.
DRAWN: L.M.
CHECKED
APPROVED:

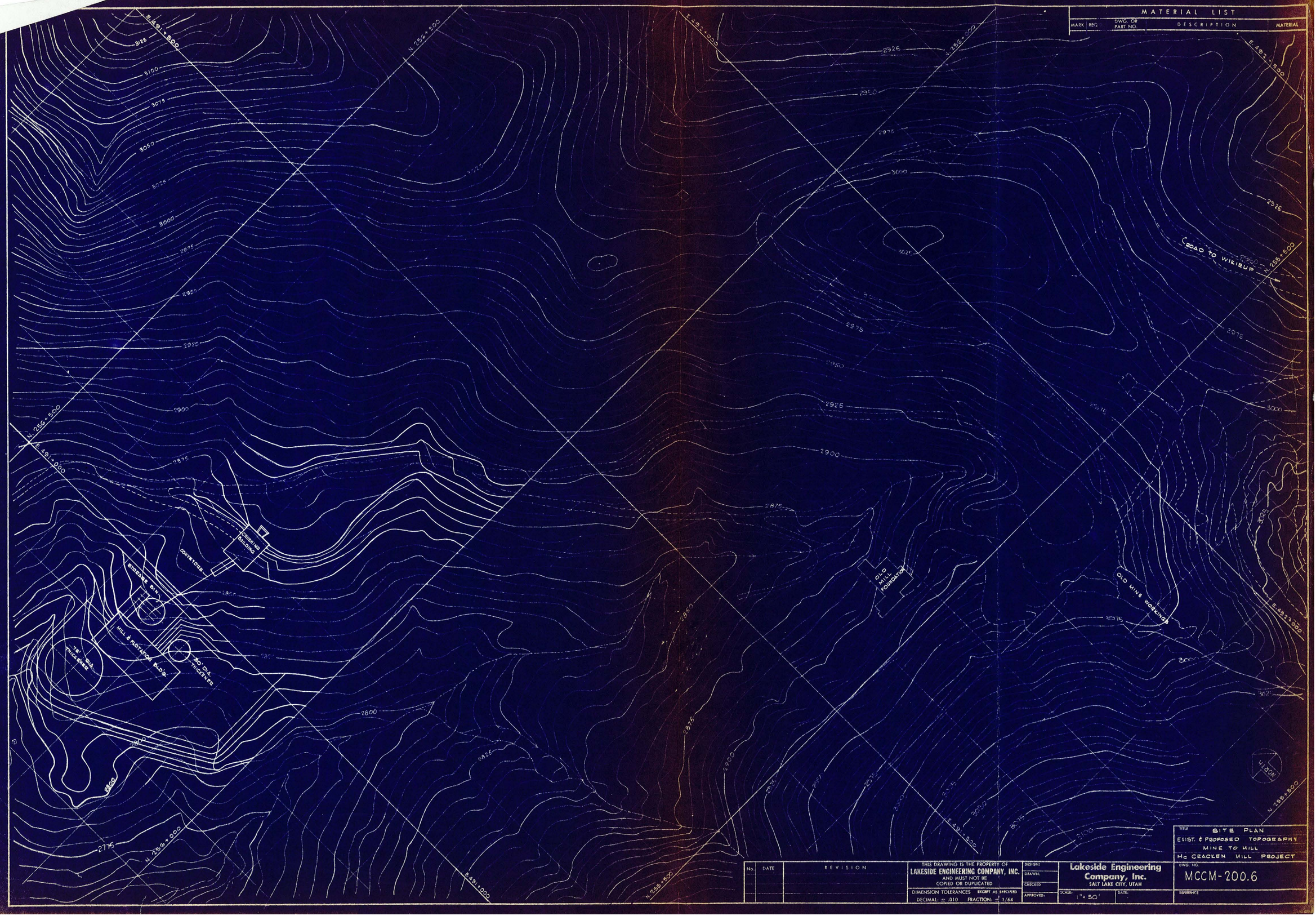
Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: NONE
DATE: 11 DEC. 68

TITLE TIME ESTIMATE
BAR GRAPH
McCRACKEN MINE
PROJECTED WORK SCHED.

DWG. NO.
MCCM 99

REFERENCE



MATERIAL LIST

MARK	REQ.	DWG. OR PART NO.	DESCRIPTION	MATERIAL

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DECIMAL: ± .010 FRACTION: ± 1/64

DESIGNED
DRAWN
CHECKED
APPROVED

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

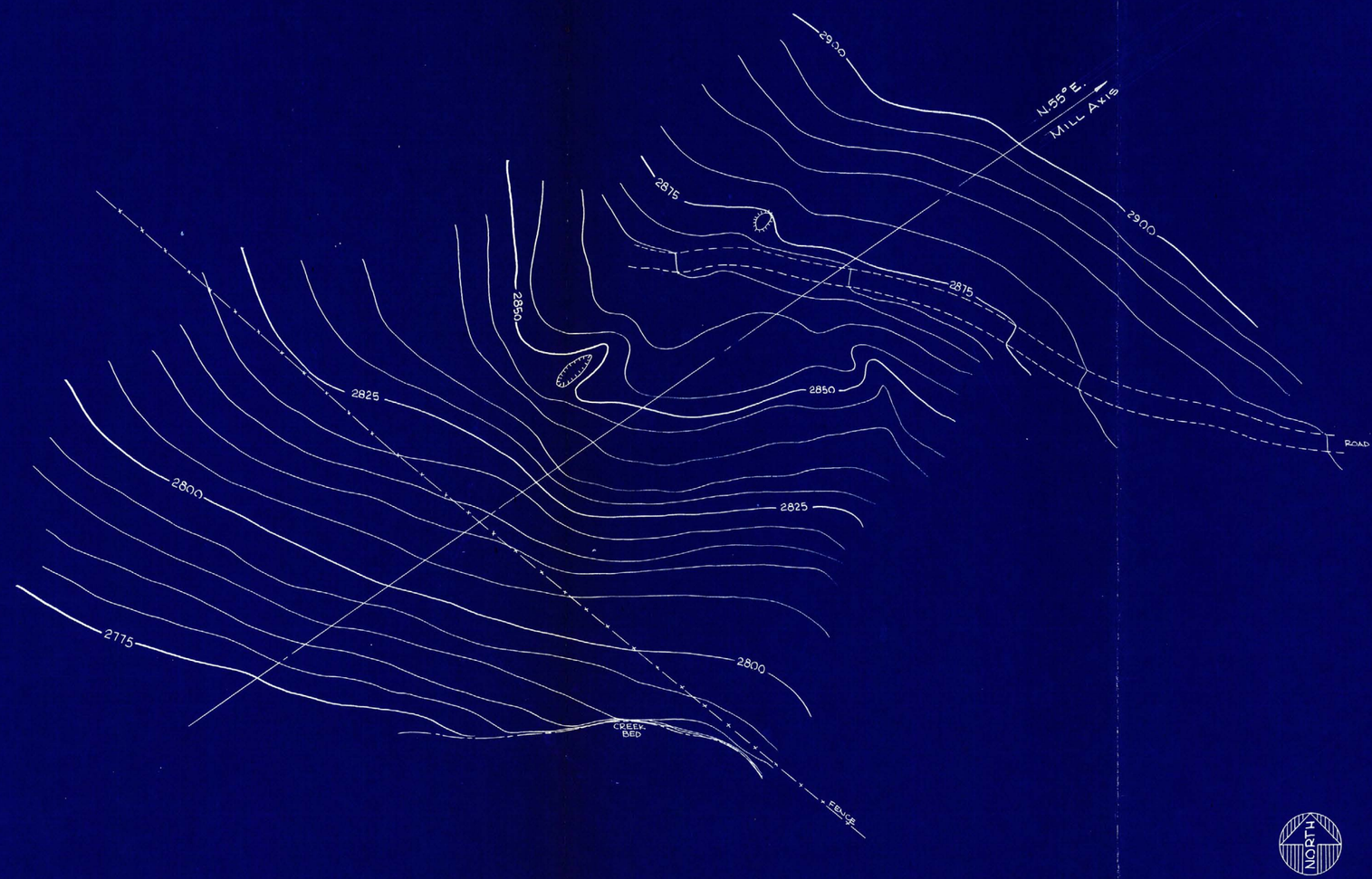
SCALE: 1" = 50'
DATE:

TITLE: SITE PLAN
EXIST. & PROPOSED TOPOGRAPHY
MINE TO MILL
McCRACKEN MILL PROJECT

DWG. NO.: MCCM-200.6

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



No.	DATE	REVISION

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DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: W. W.
DRAWN: R.C.B.
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

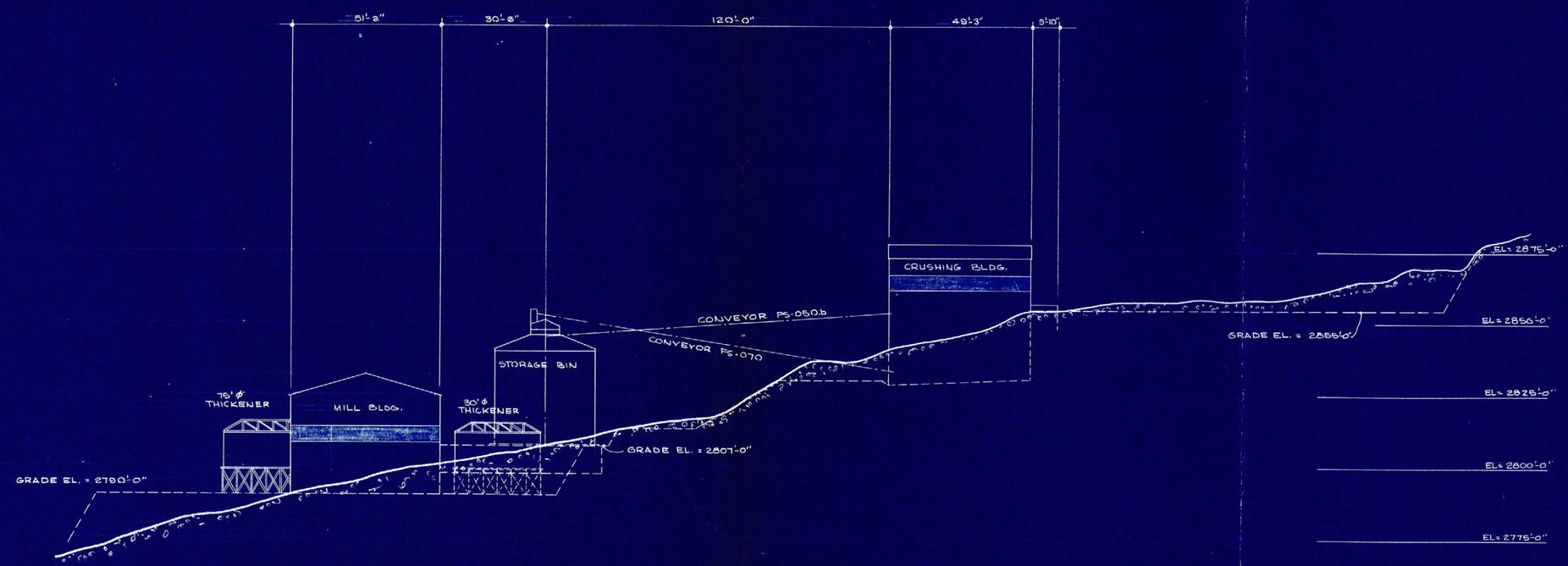
SCALE: 1" = 40'
DATE: 9 DEC. 08

TITLE
EXISTING TOPOG. (NEW)
McCRACKEN SILVER MINE

DWG. NO.
MCCM-200-8

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



NOTE - 30' ϕ THICKENER MAY BE ELEVATED OR MOVED

No.	DATE	REVISION

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DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN:
DRAWN: BCB
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

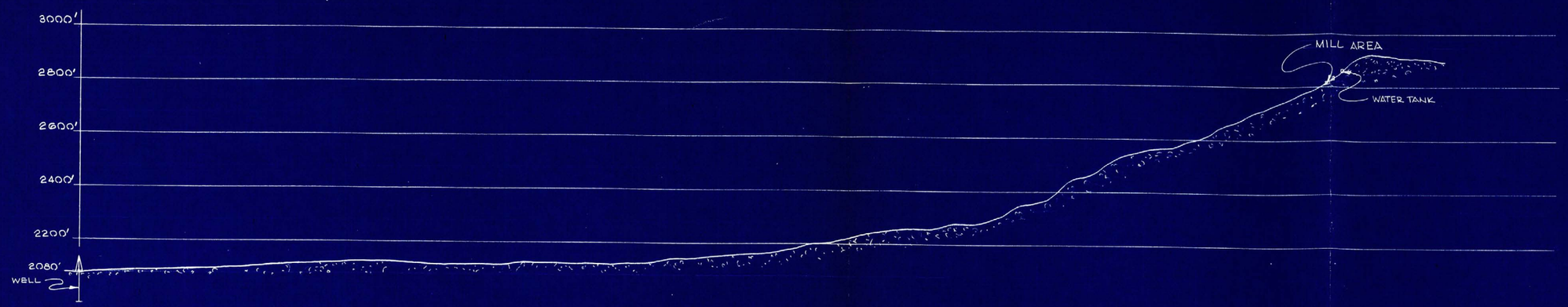
SCALE: 1" = 20'-0" DATE: 11 DEC 68

TITLE CROSS SECTIONAL VIEW OF MILL AXIS
McCRACKEN SILVER MINE

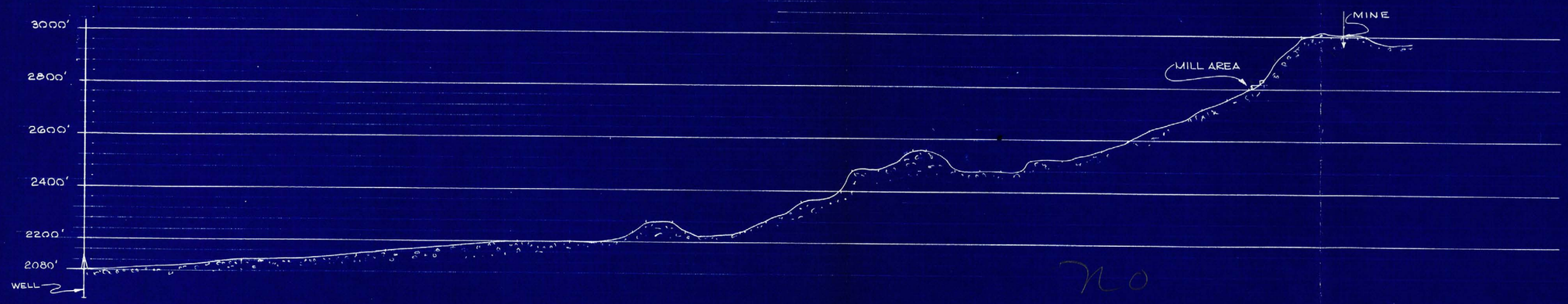
DWG. NO. MCCM-200·9

REFERENCE DWG. MCCM-200·8

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



- SIMULATED CUT #2 -
FROM WELL TO MINE
CURVED CUT
APROX. MILEAGE = 5.2 -



- SIMULATED CUT #1 -
FROM WELL TO MINE
STRAIGHT CUT
APROX. MILEAGE = 4.7 -

- NOTE - DISTANCES AND TOPO
TAKEN FROM CASTANEDA
HILLS QUADRANGLE
ARIZONA 15 MIN. SERIES
U.S.G.S. SURVEY 1986

No.	DATE	REVISION

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DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN:
DRAWN: R.C.B.
CHECKED
APPROVED:

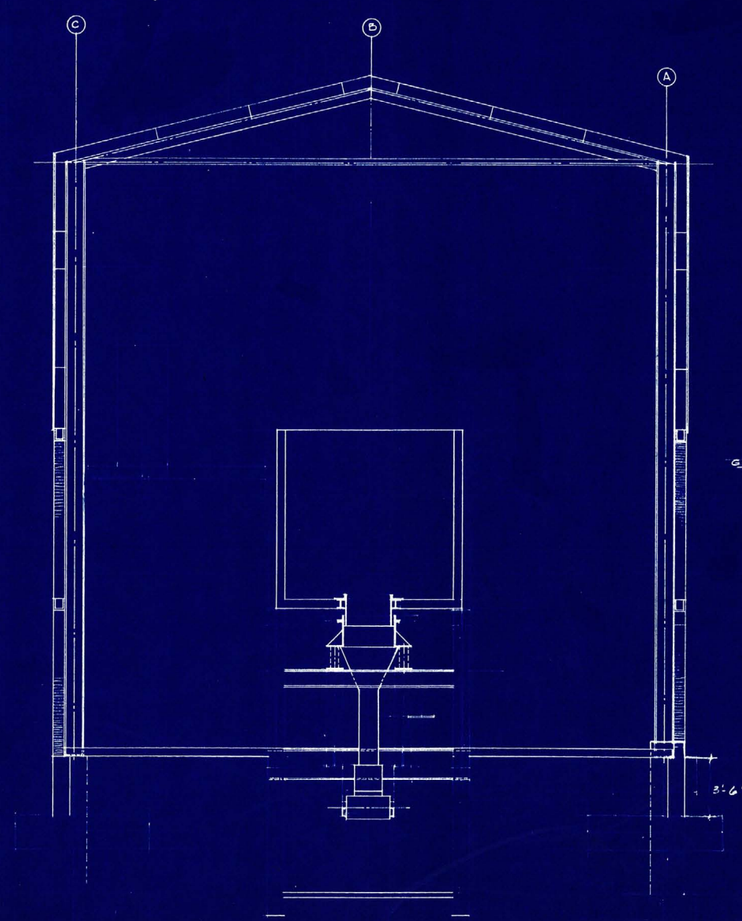
Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

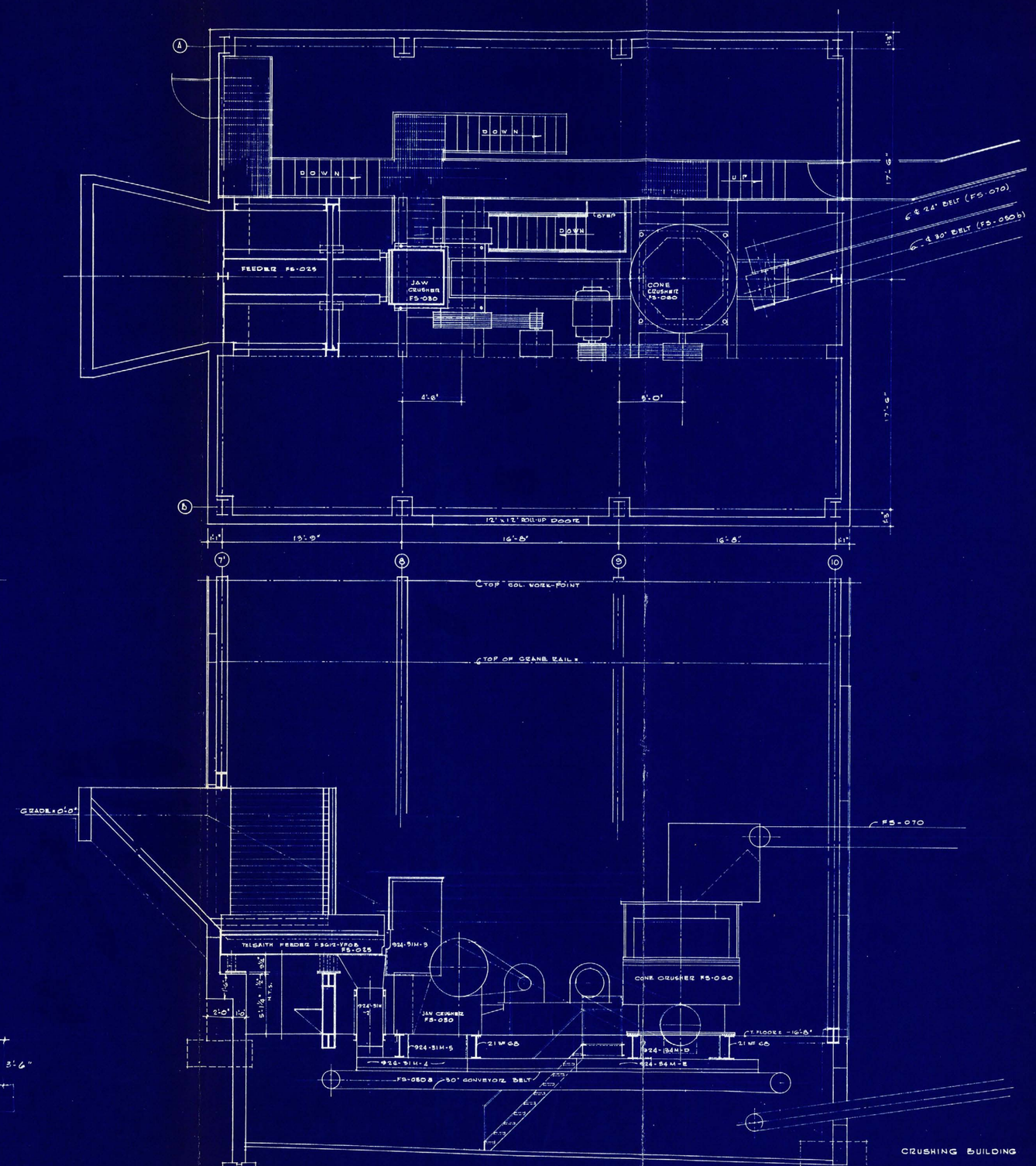
SCALE: 5" = 1 MILE DATE: 6 DEC. 68

TITLE - SIMULATED CUTS -
ESTIMATED WATER PIPE PATH
McCRACKEN SILVER MINE

DWG. NO. MCCM-200-10

REFERENCE





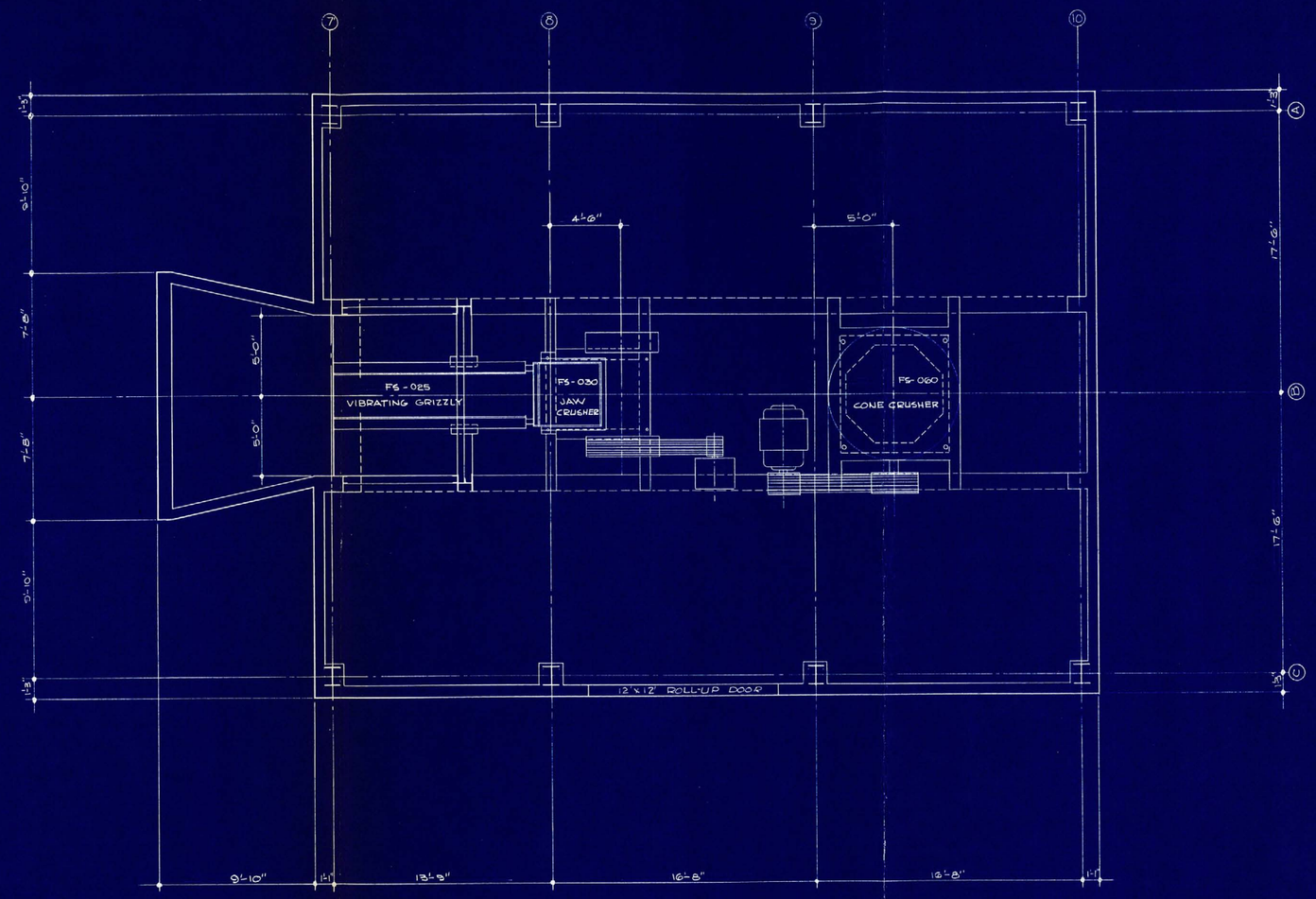
CRUSHING BUILDING

McCRACKEN SILVER MINE

G.S. DAVIS 13 NOV. 68

LAKESIDE ENGINEERING CO.
1549 So. 11TH EAST S.L.C. UTAH

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: GSD
DRAWN: R.C.B.
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

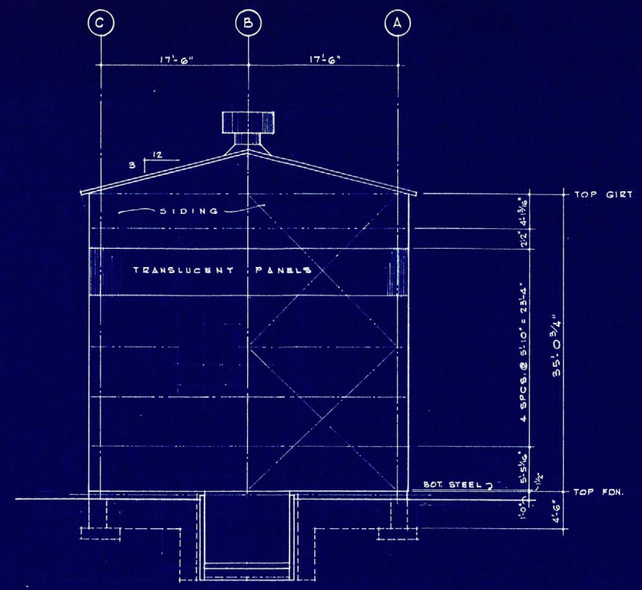
SCALE: 1/4" = 1'-0"
DATE: 11 NOV. 68

TITLE: CRUSHER BUILDING
McCRACKEN SILVER MINE

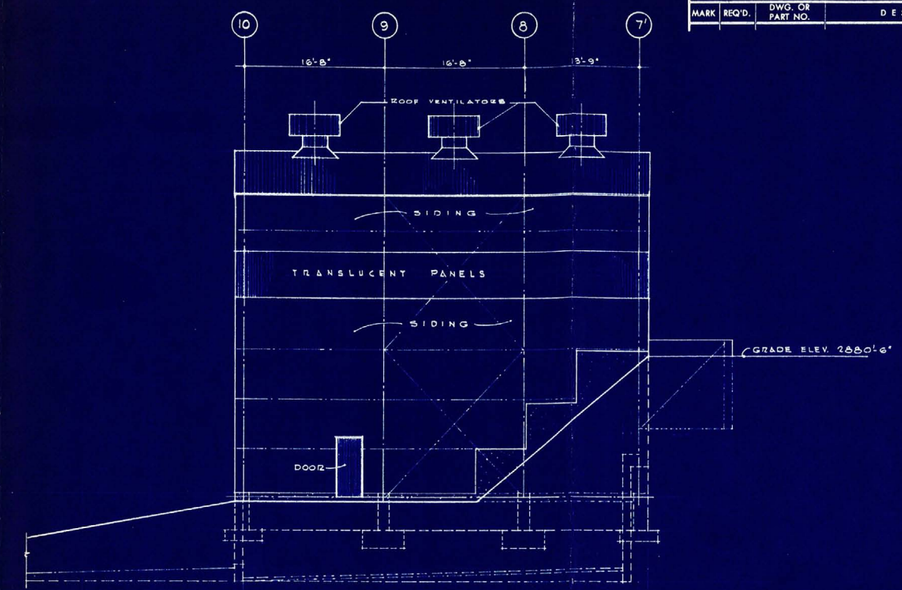
DWG. NO. M.C.C.M. - 300.10

REFERENCE

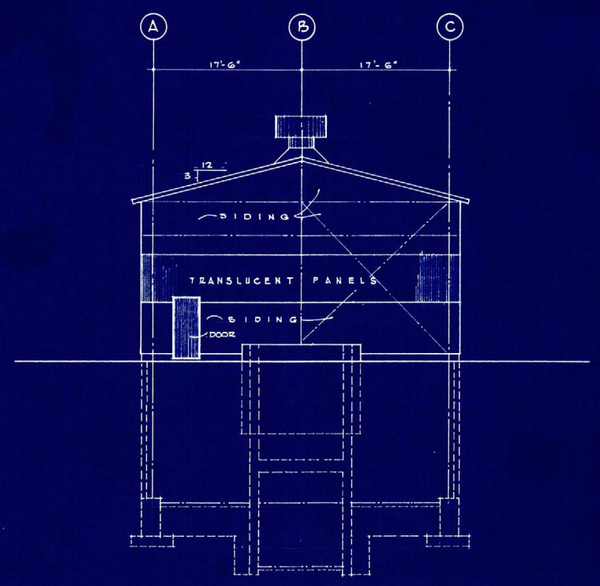
MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



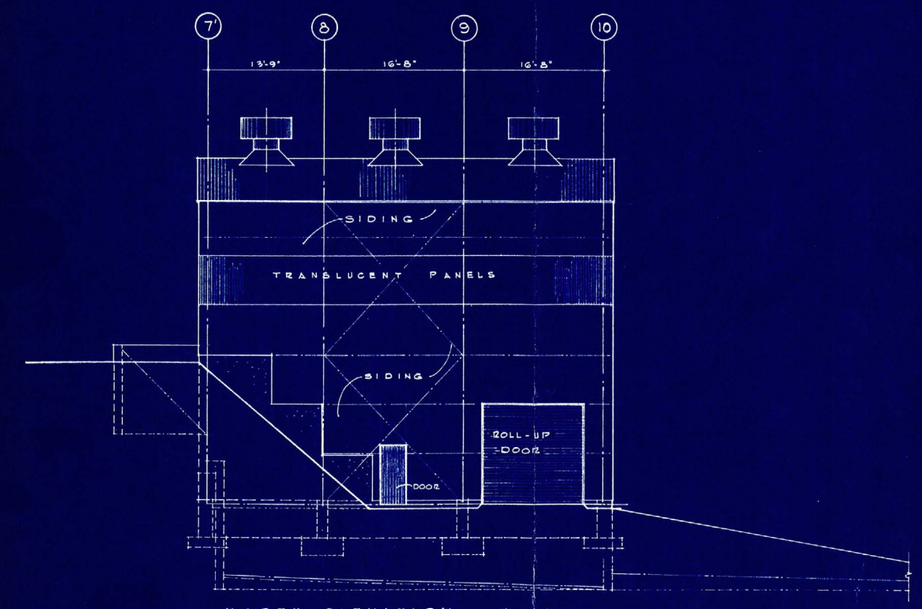
• WEST ELEVATION • 1/8" = 1'-0"



• SOUTH ELEVATION • 1/8" = 1'-0"



• EAST ELEVATION • 1/8" = 1'-0"



• NORTH ELEVATION • 1/8" = 1'-0"

No.	DATE	REVISION

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DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: G.S.D.
DRAWN: G.S.D.
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: 1/8" = 1'-0"
DATE: 19 NOV. 68

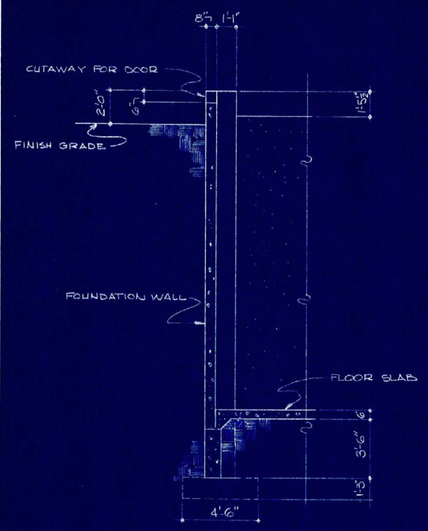
TITLE: CRUSHING BUILDING EXTERIOR ELEVATIONS

McCRACKEN MILL PROJECT

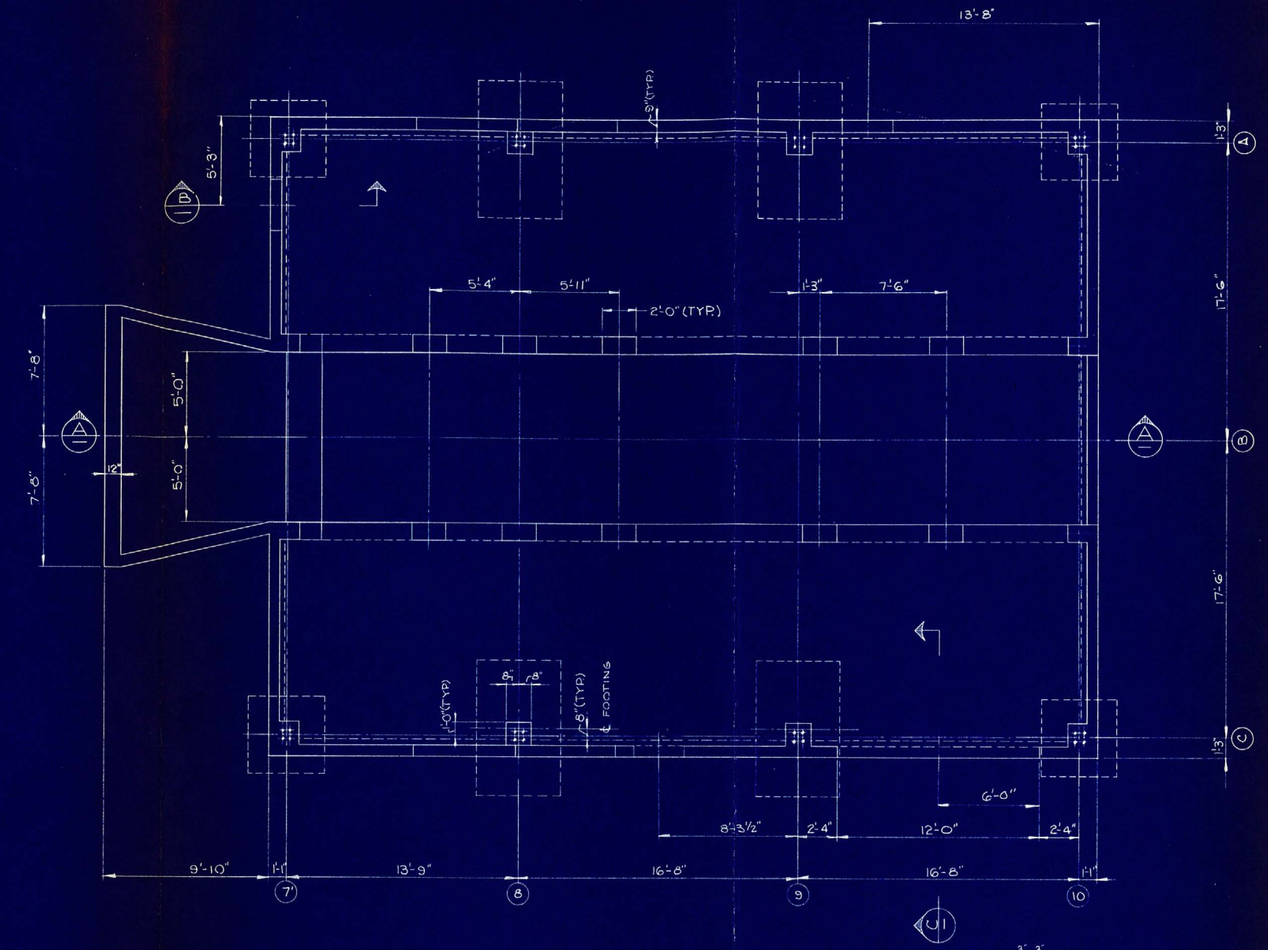
DWG. NO. MCCM-300.11

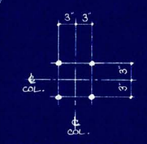
REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL

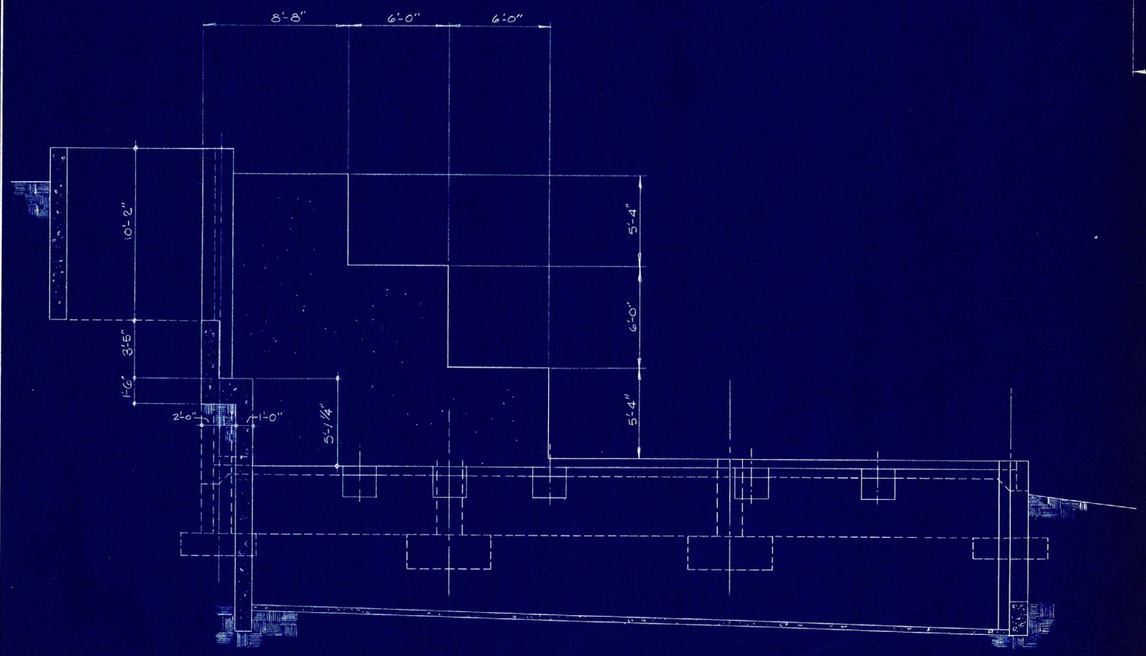


SECTION B
1/4" = 1'-0"

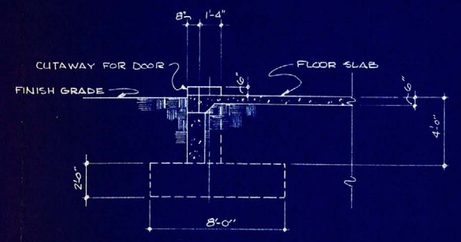




- ANCHOR BOLT ARRANGEMENT -



SECTION A
1/4" = 1'-0"



(TYP) ALL DOOR SECTIONS

SECTION C
1/4" = 1'-0"

No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: G.S.D.
DRAWN: R.C.B.
CHECKED
APPROVED:

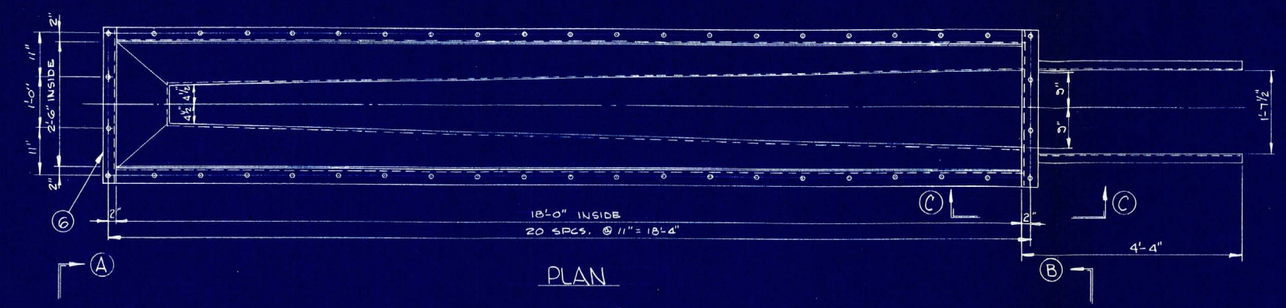
Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: 1/4" = 1'-0"
DATE: 20 NOV. 68

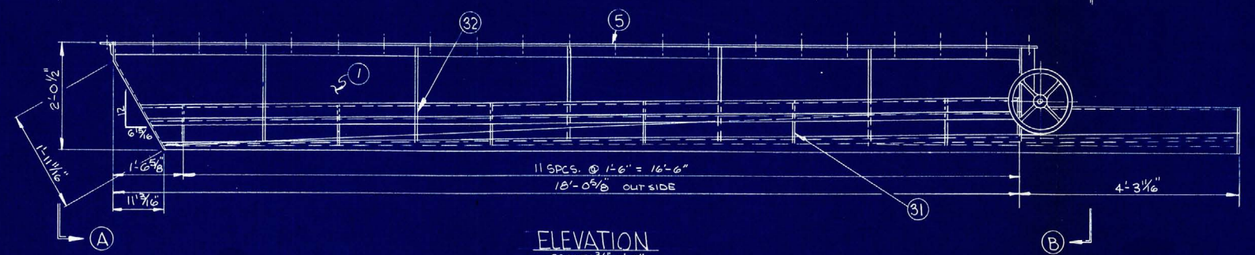
TITLE: CRUSHER BUILDING FOUNDATION & SECTIONS McCRACKEN SILVER MINE

DWG. NO. MCCM-300-20

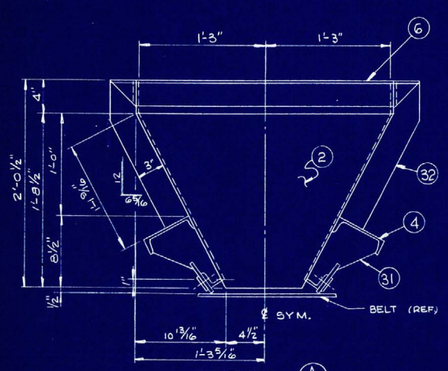
REFERENCE



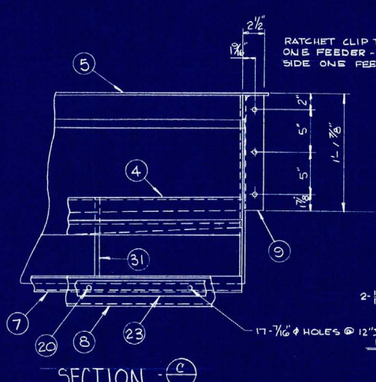
PLAN



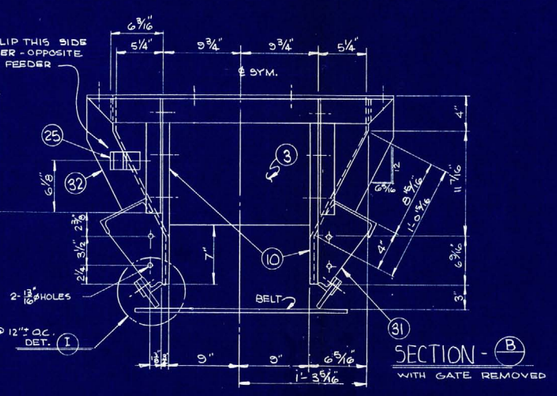
ELEVATION
SCALE: ¾" = 1'-0"



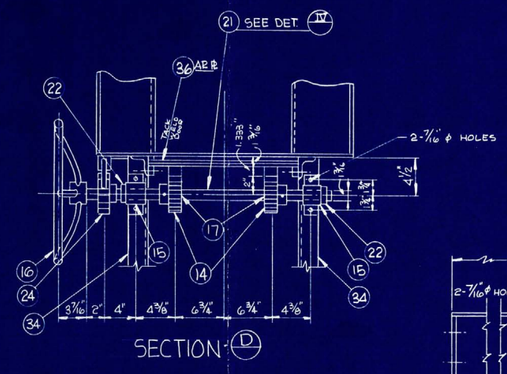
SECTION - (A)
1½" = 1'-0"



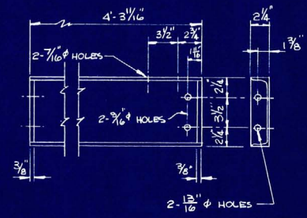
SECTION - (C)



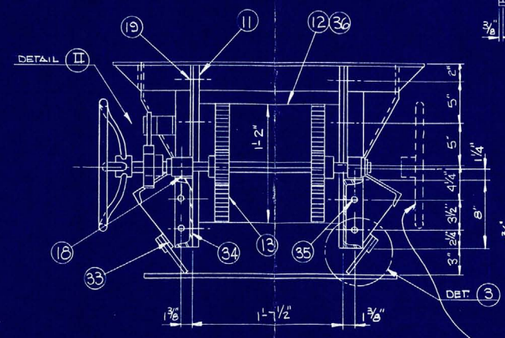
SECTION - (B)
WITH GATE REMOVED



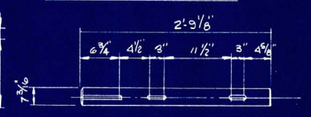
SECTION - (D)



DETAIL OF ITEM 34
SCALE: 1½" = 1'-0"
- ONE REQ'D AS SHOWN -
- ONE REQ'D OPPOSITE HAND -

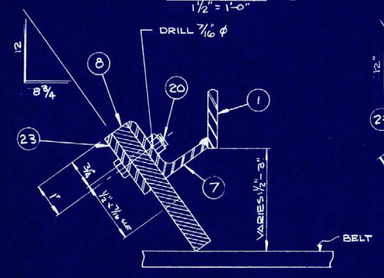


SECTION - (B)
1½" = 1'-0"

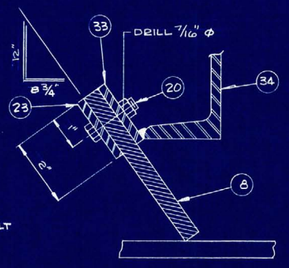


SHAFT DETAIL (IV)
ITEM NO - (21)

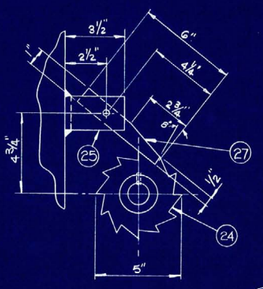
ONE REQ'D AS SHOWN
ONE REQ'D WITH HANDWHEEL & RATCHET OPP. SIDE

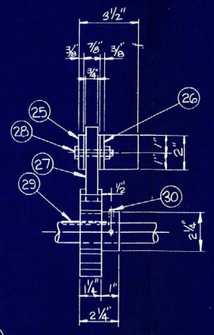


DETAIL - (I)
- HALF SIZE -



DETAIL - (III)
HALF SIZE -





DETAIL - (II)
3" = 1'-0"

-NOTE-
SHOP ASSEMBLE BEFORE SHIPPING

MATERIAL LIST

MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL
1	2		PL. 26" x 5/16" x 18'-0"	SIDE PLATE
2	1		PL. 28" x 5/16" x 2'-6 5/8"	BACK PLATE
3	1		PL. 15" x 5/16" x 2'-6 5/8"	FRONT PLATE
4	2		CHL 8.2 x 17'-4"	
5	2		∠ 3" x 3" x 5/16" x 18'-0 5/8"	
6	2		∠ 3" x 3" x 5/16" x 3'-0 5/8"	
7	2		∠ 1½" x 2" x ⅛" x 17'-0"	
8	2		RUBBER ½" THICK x 5½" x 21'-4"	
9	2		∠ 2½" x 2" x ⅛" x 1'-1 9/16"	
10	2		BAR ¾" x 5/16" x 1'-7"	
11	2		BAR 1" x ¾" x 1'-7" (LOOSE & REMOVABLE)	
12	1		PL. 14" x ¼" x 1'-7 3/8"	
13	2		14½" P.A. (ROLLER GEAR) ∠ 521 - 6 P x 13" - 1½ FACE x 1½ D.	
14	2		1⅞" FACE - 14½ PA - 24 T. - RC# NJ24 - 1 3/16 B - ¼ x ⅛ K.W.	
15	2		1 3/16" SOLID JOURNAL BEARING — DODGE	
16	1		LINK BELT #C-24099 - 1 3/16" B - ¼ x ⅛ K.W.	
17	2		¼" x ¼" x 2½" KEY STOCK	
18	4		⅜" ϕ 16 N.C. x 2" M.B.	
19	0		½" ϕ - 13 N.C. x 2" FLAT HD. MACH SCW.	
20	44		⅜" ϕ 16 N.C. x 1½" M.B.	
21	1		1 3/16" ϕ CRS. x 2'-9⅛"	
22	2		DODGE - SOLID - STEEL 1 3/16" BORE	
23	2		BAR 2" x ⅛" x 21'-4"	
24	1		5" ϕ - 1¼" F. - 2¼" HUB LGTH - 1 3/16" BORE	
25	1		∠ 3½" x 3½" x ⅜" x 0'-2"	
26	1		BAR 2" x ⅜" x 0'-3⅛"	
27	1		BAR 1" x ¾" x 0'-6"	
28	1		⅜" ϕ 16 N.C. x 2" MACH. BOLT	
29	1		¼" x ¼" x 6½" KEY STOCK	
30	2		⅜" ϕ 16 N.C. x ¾" HEX. SOCKET	
31	24		PL 6" x ⅜" x 0'-3½"	
32	10		BAR 3" x ⅜" x 1'-6"	
33	2		BAR 2" x ¼" x 4'-3½"	
34	2		8" LJ 11.5 x 4'-3 11/16"	
35	4		¾" ϕ - 10 N.C. x 1½" M.B.	
36	1		A R ℞ 14" x ½" x 1'-7 3/8"	

No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF **LAKESIDE ENGINEERING COMPANY, INC.** AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN:
DRAWN: R.C.B.
CHECKED
APPROVED:

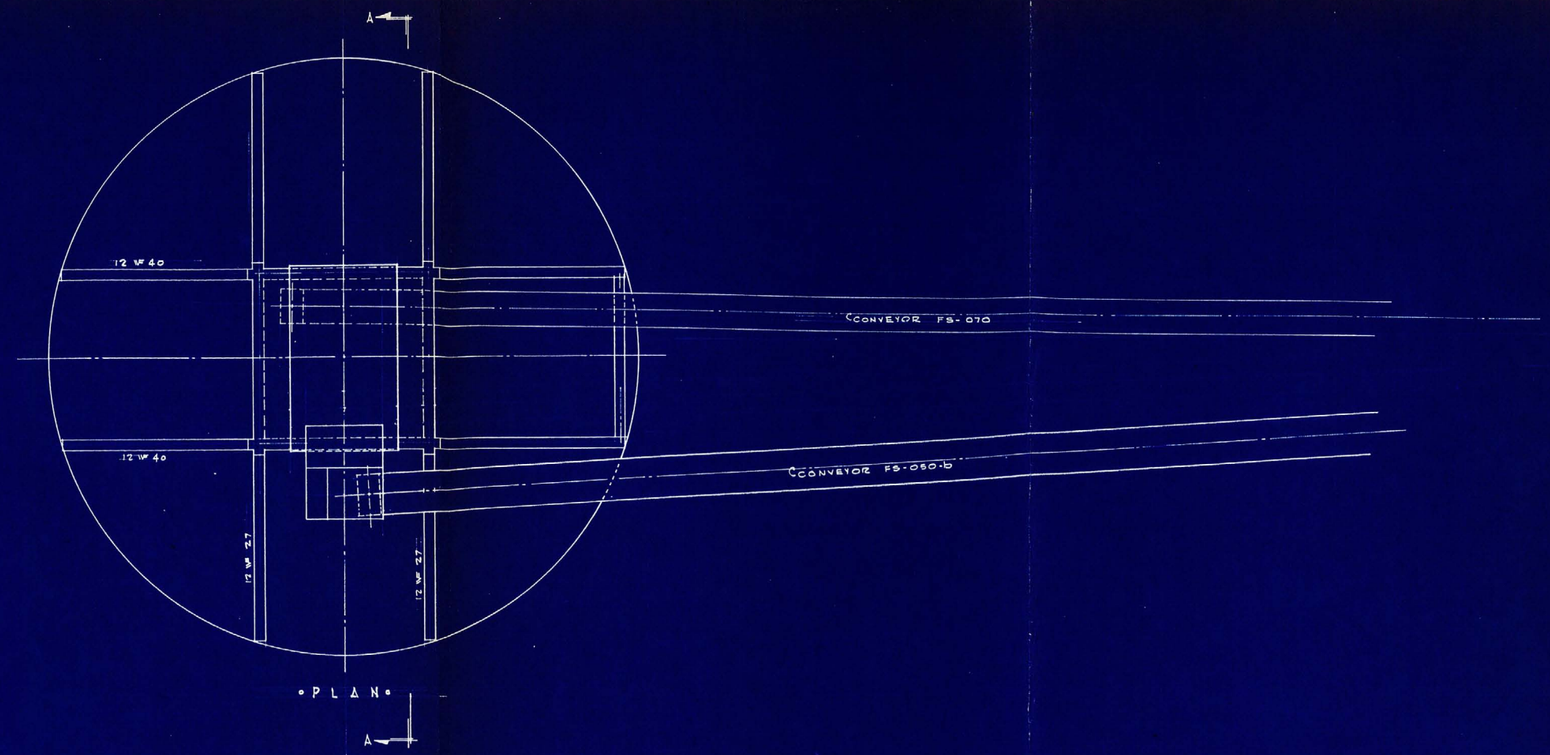
Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: NOTED
DATE: 4 NOV. 68

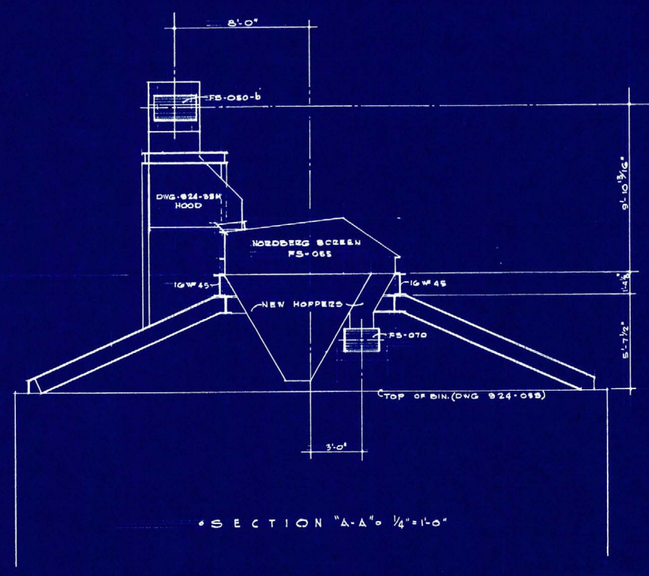
TITLE: BELT FEEDER

DWG. NO. G-MCCM-400-10

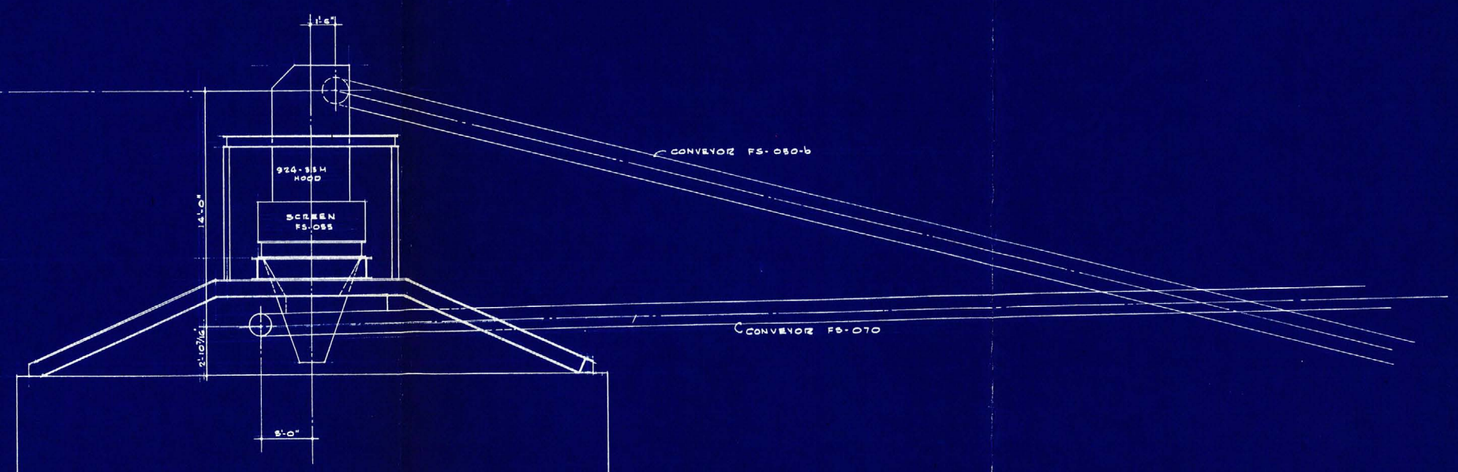
REFERENCE: REDRAWN - FROM G- PRINT



• PLAN •



• SECTION "A-A" • 1/4" = 1'-0"



• LAYOUT •

Mc CRACKEN MILL PROJECT

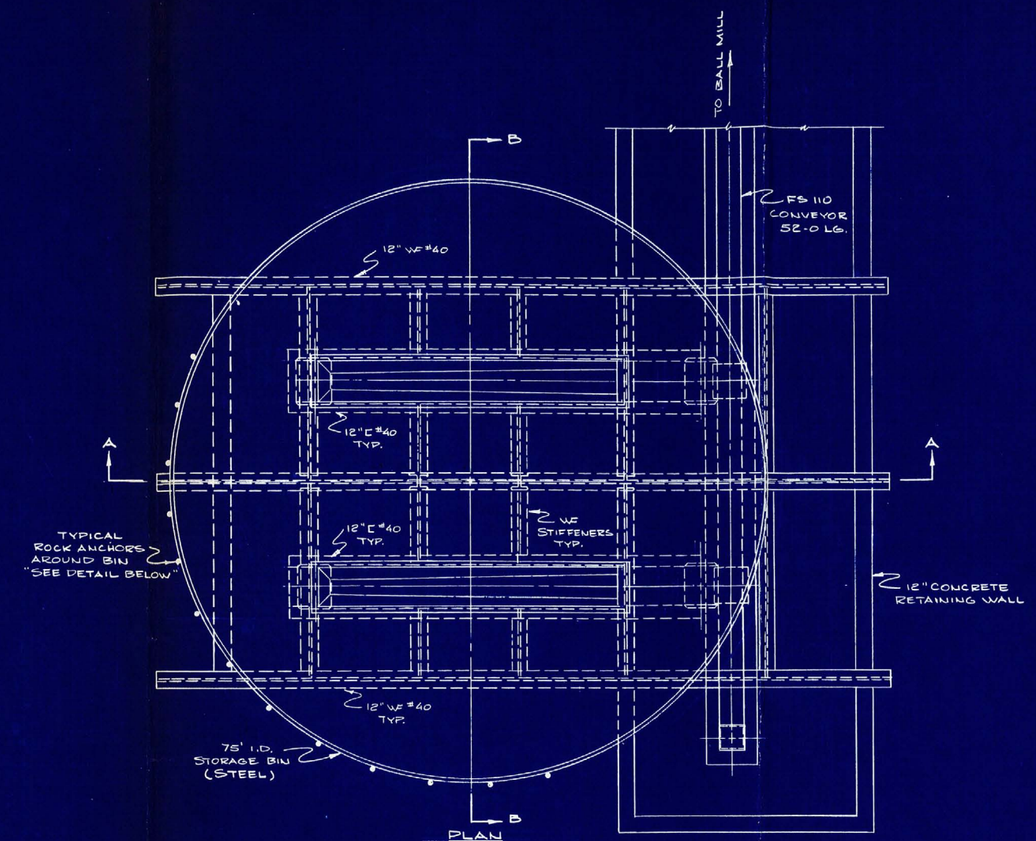
TOP OF ORE BIN

G.S.D. 20 NOV. 68

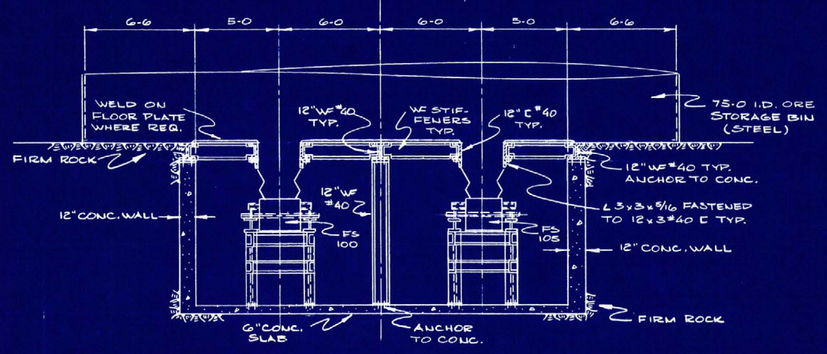
SCALE: 1/4" = 1'-0"

NOTE:
ALL DIMENSIONS ARE TO BE VERIFIED BEFORE DETAIL DRAWINGS ARE MADE.

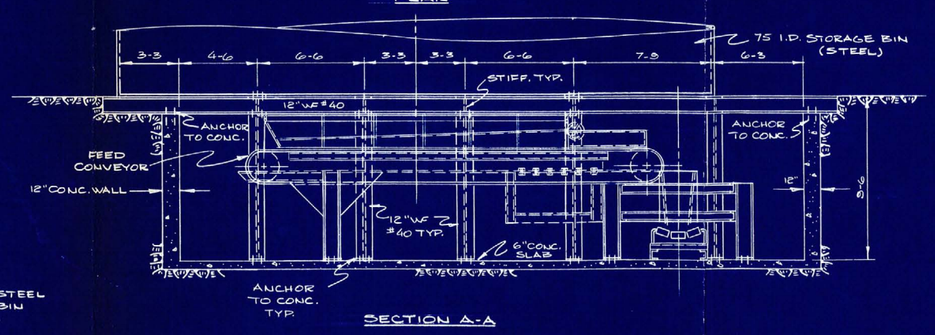
MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



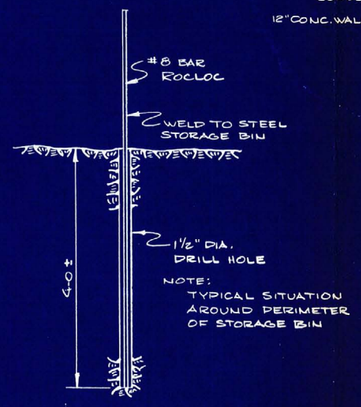
PLAN



SECTION B-B



SECTION A-A



NOTE:
TYPICAL SITUATION
AROUND PERIMETER
OF STORAGE BIN

ROCK ANCHOR
N.T.S.

No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF **LAKESIDE ENGINEERING COMPANY, INC.** AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN:
DRAWN: L.K.M.
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

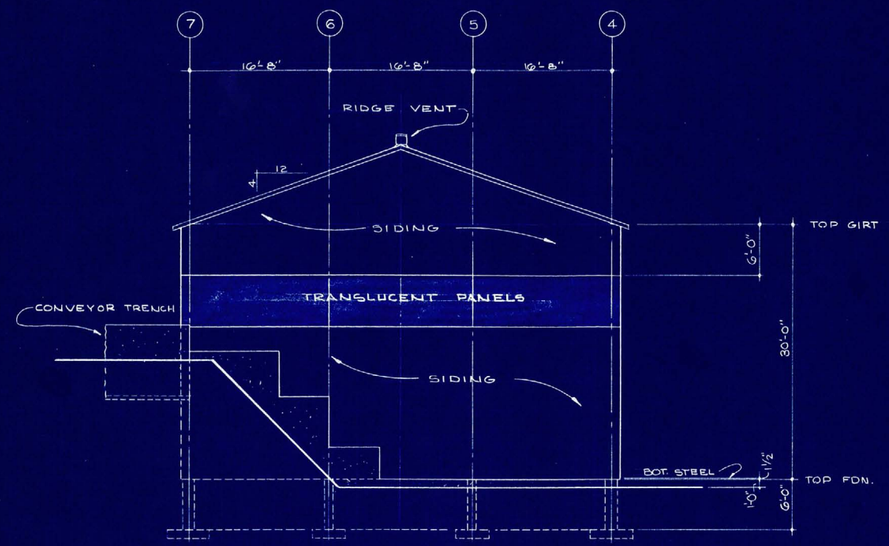
SCALE: 1/4" = 1'-0"
DATE: 10 DEC. 68

TITLE ORE STORAGE BIN
SUPPORT SYSTEM &
BELT FEEDERS TO MILL

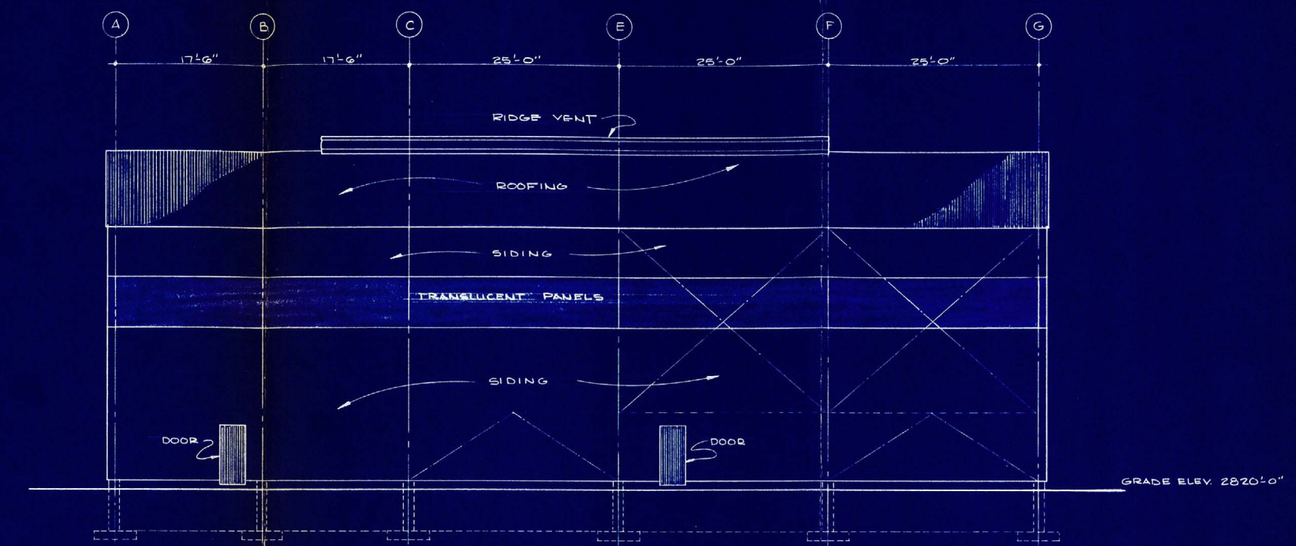
DWG. NO. MCCM 500.10

REFERENCE

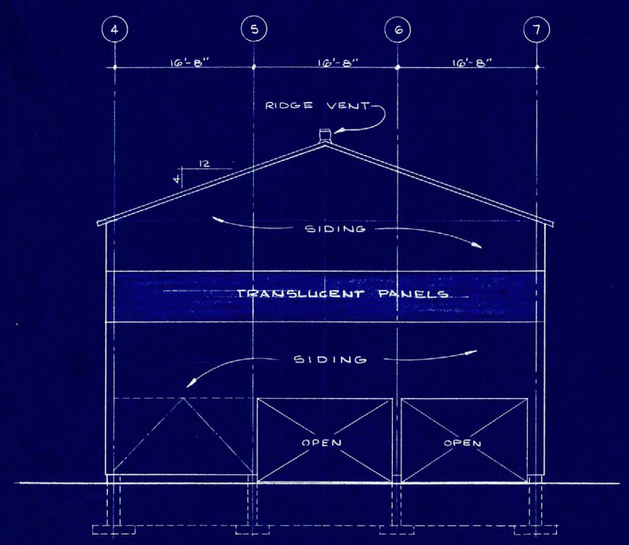
MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



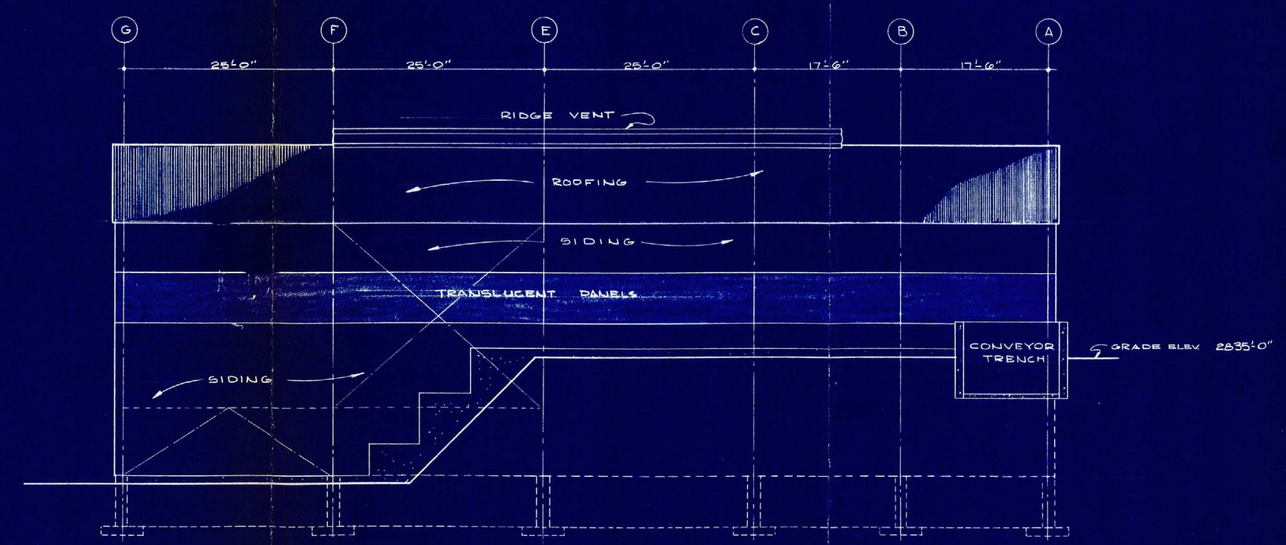
◦NORTH ELEVATION◦ 1/8"=1'-0"



◦WEST ELEVATION◦ 1/8"=1'-0"



◦SOUTH ELEVATION◦ 1/8"=1'-0"



◦EAST ELEVATION◦ 1/8"=1'-0"

No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF LAKESIDE ENGINEERING COMPANY, INC. AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: SSD
DRAWN: RCB
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

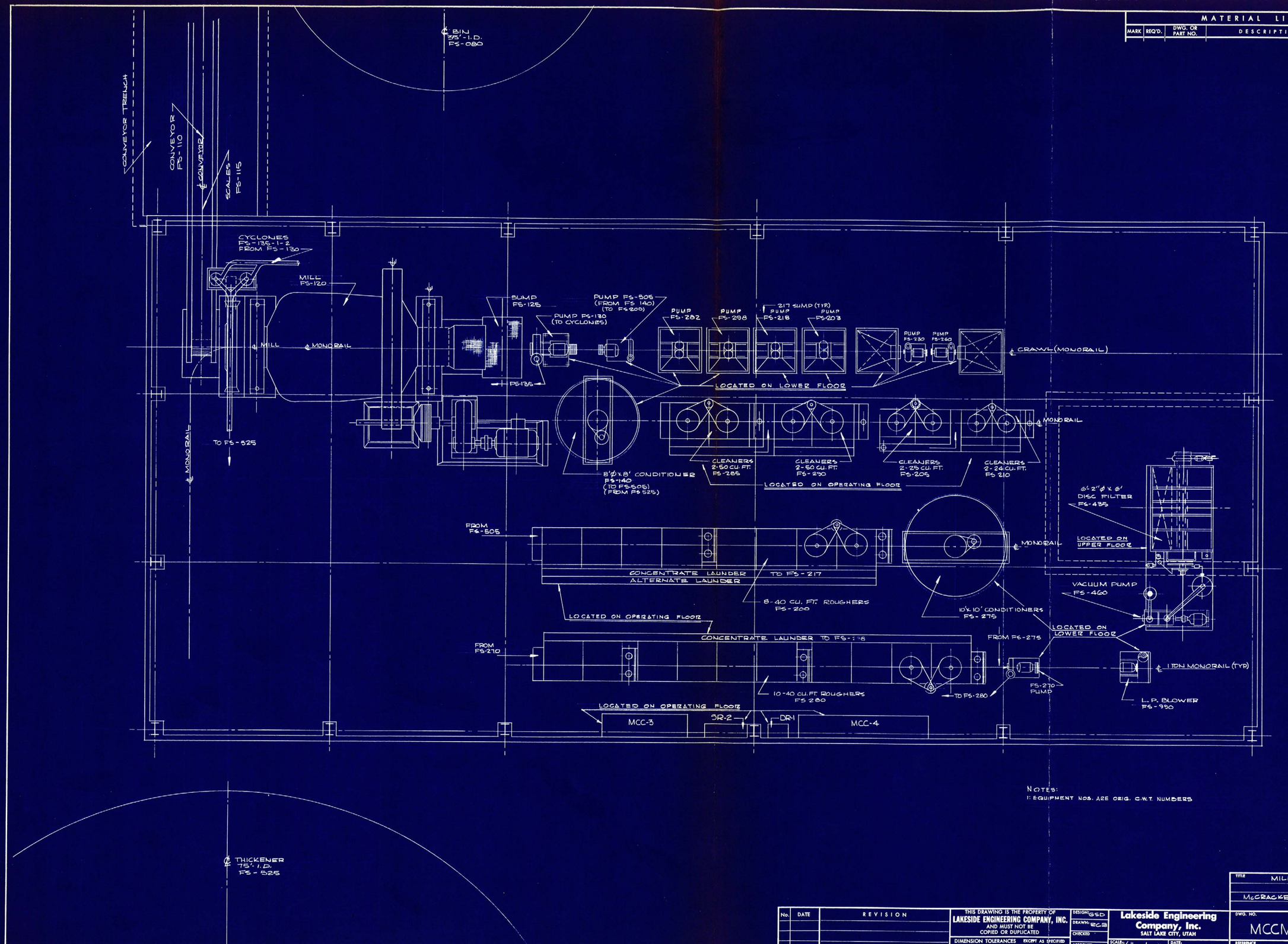
SCALE: 1/8"=1'-0" DATE: 21-NOV-68

TITLE EXTERIOR ELEVATIONS
MILL BUILDING
McCRACKEN SILVER MIN

DWG. NO. MCCM-600-10

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



NOTES:
1: EQUIPMENT NOS. ARE ORIG. C.W.T. NUMBERS

No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF **LAKESIDE ENGINEERING COMPANY, INC.** AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: GSD
DRAWN: RCB
CHECKED:
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

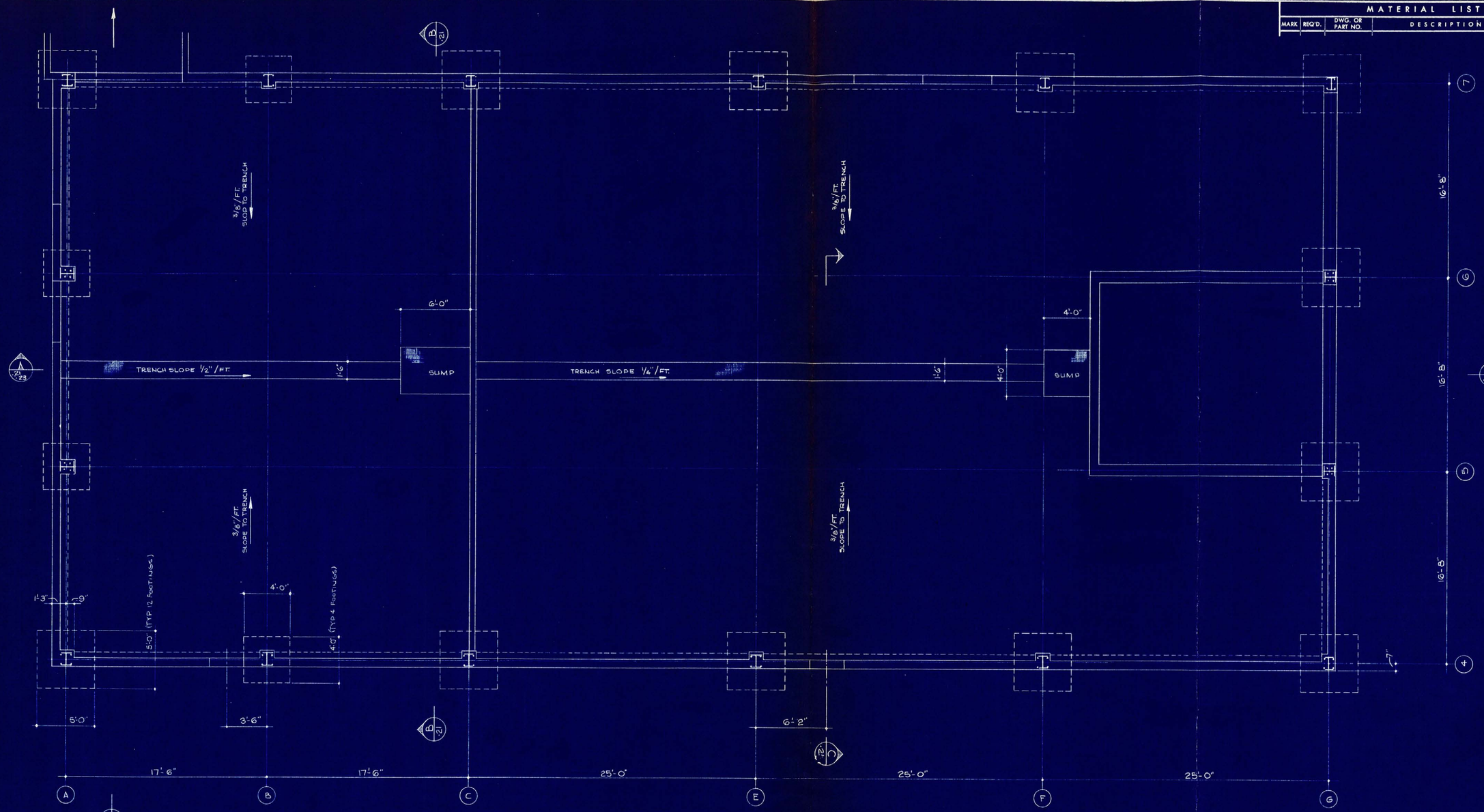
SCALE: 1/4" = 1'-0"
DATE: 12-NOV-68

TITLE: MILL BUILDING
McCRACKEN SILVER MINE

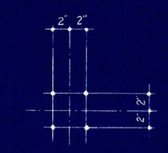
DWG. NO. MCCM-600.10

REFERENCE

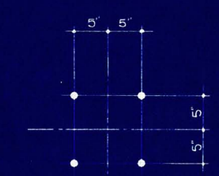
MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



PLAN 1/4" = 1'-0"



ANCHOR BOLT ARRANGEMENT
(TYP. FOR A5, A6, G5, G6)



ANCHOR BOLT ARRANGEMENT
(TYP. FOR LINES 4 & 7)

No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF LAKESIDE ENGINEERING COMPANY, INC. AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: G.S.D. DRAWN: R.C.B. CHECKED APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

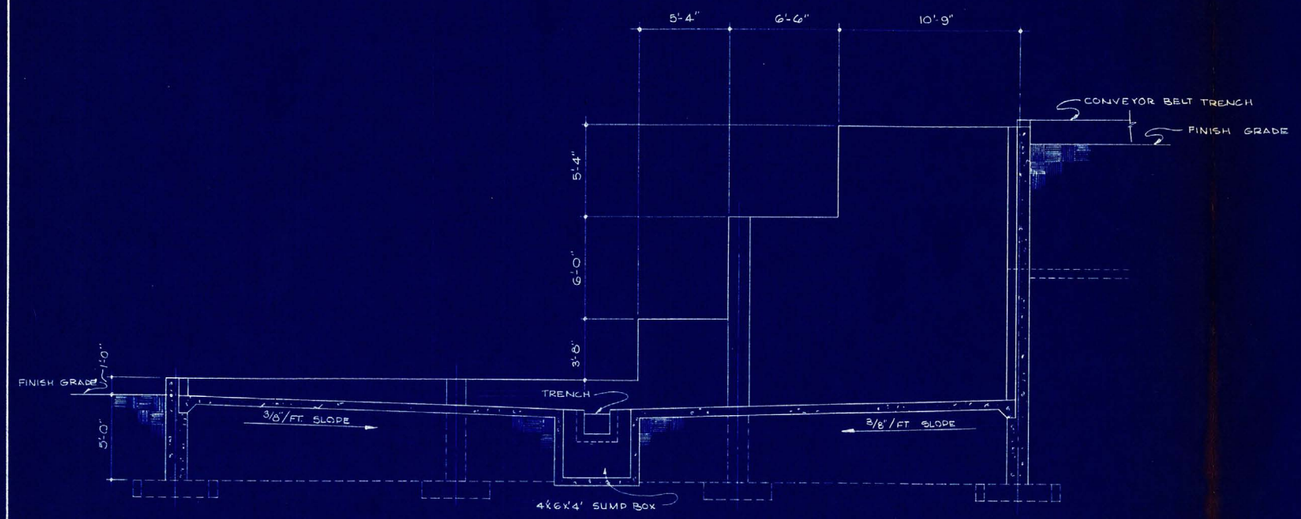
SCALE: NOTED DATE: NOV. 68

TITLE FOUNDATION & SECTIONS MILL BUILDING McCRACKEN SILVER MINE

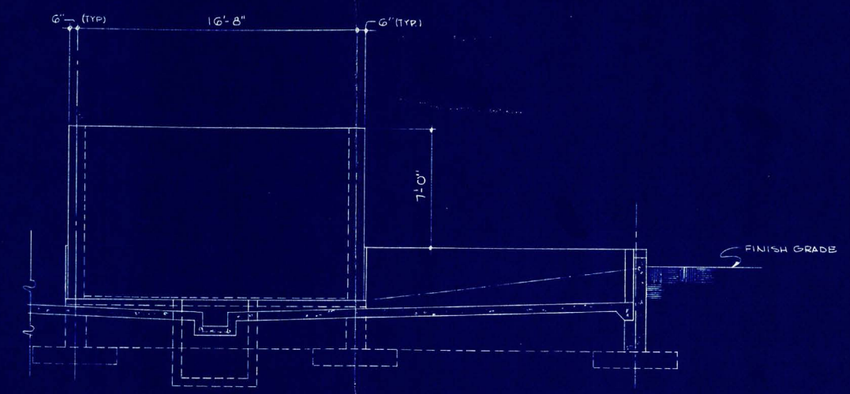
DWG. NO. MCCM-600-20

REFERENCE 1 OF 2 SHEETS

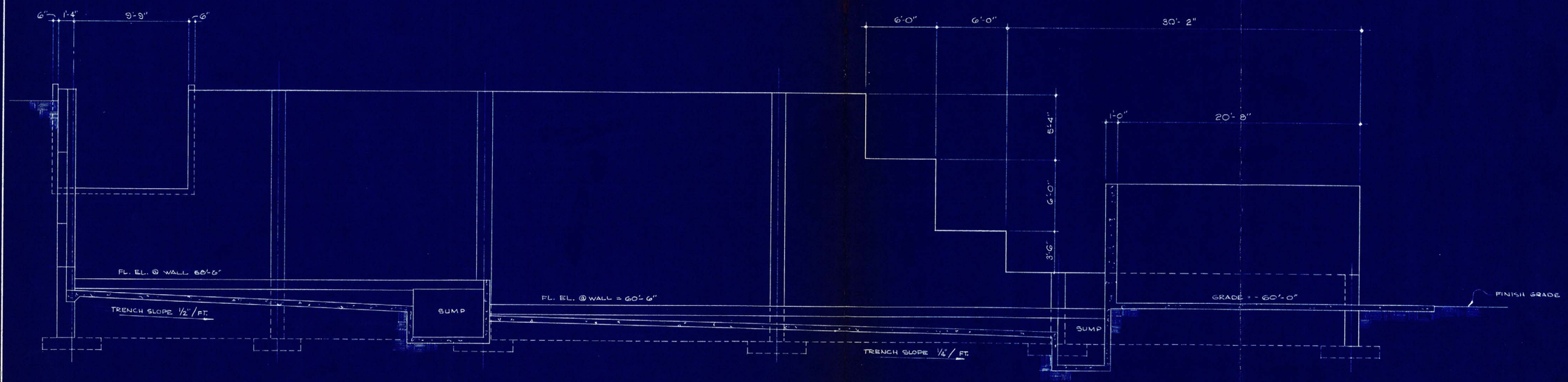
MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



SECTION B/20



SECTION C/20



SECTION A/20

No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: GSO
DRAWN: RCB
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

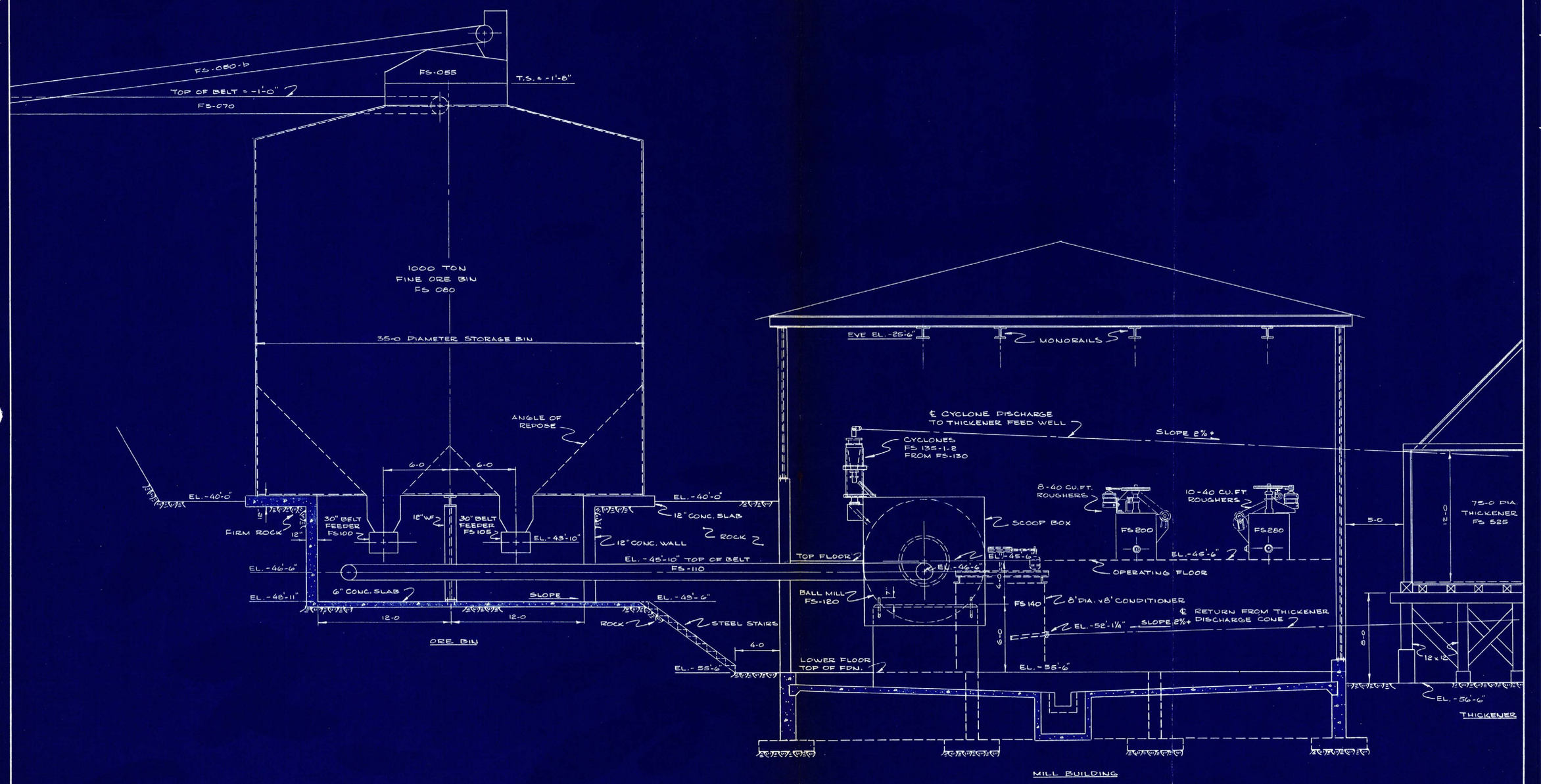
SCALE: 1/4" = 1'-0"
DATE: 27 NOV 68

TITLE: FOUNDATIONS & SECTION MILL BUILDING
McCRACKEN SILVER MINE

DWG. NO. MCCM-600-21

REFERENCE 2 OF 2 SHEETS

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF **LAKESIDE ENGINEERING COMPANY, INC.** AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGNED:
DRAWN: L.K.M.
CHECKED:
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

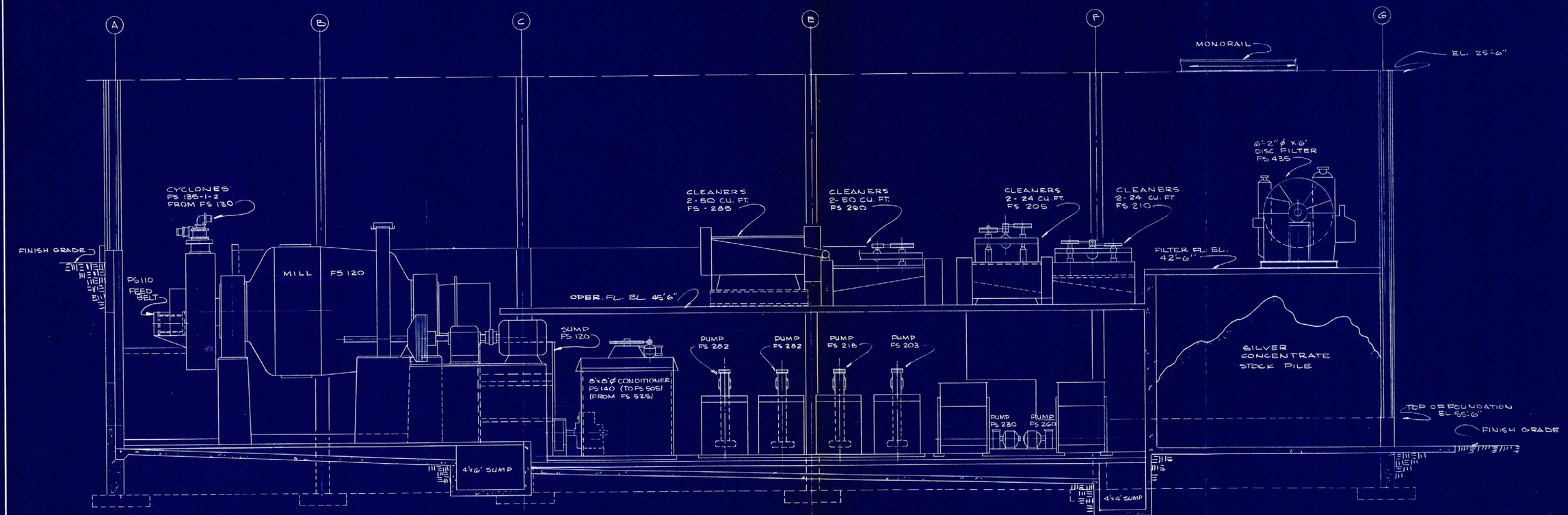
SCALE: 1/4" = 1-0
DATE: DEC. 5, 1968

TITLE: SECTION D-D
TYPICAL SECTION THRU ORE BIN, MILL BUILDING AND THICKENER

DWG. NO. MCCM-600.22

REFERENCE MCCM-100.1

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



PLAN
SECTION A/20

No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: DRAWN: RCB CHECKED APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: 1/4" = 1'-0" DATE: 5 DEC. 68

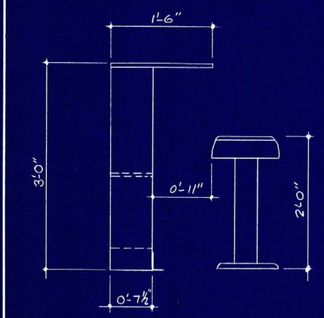
TITLE LONG SECTION THRU MILL (A-A)

McCRACKEN SILVER MINE

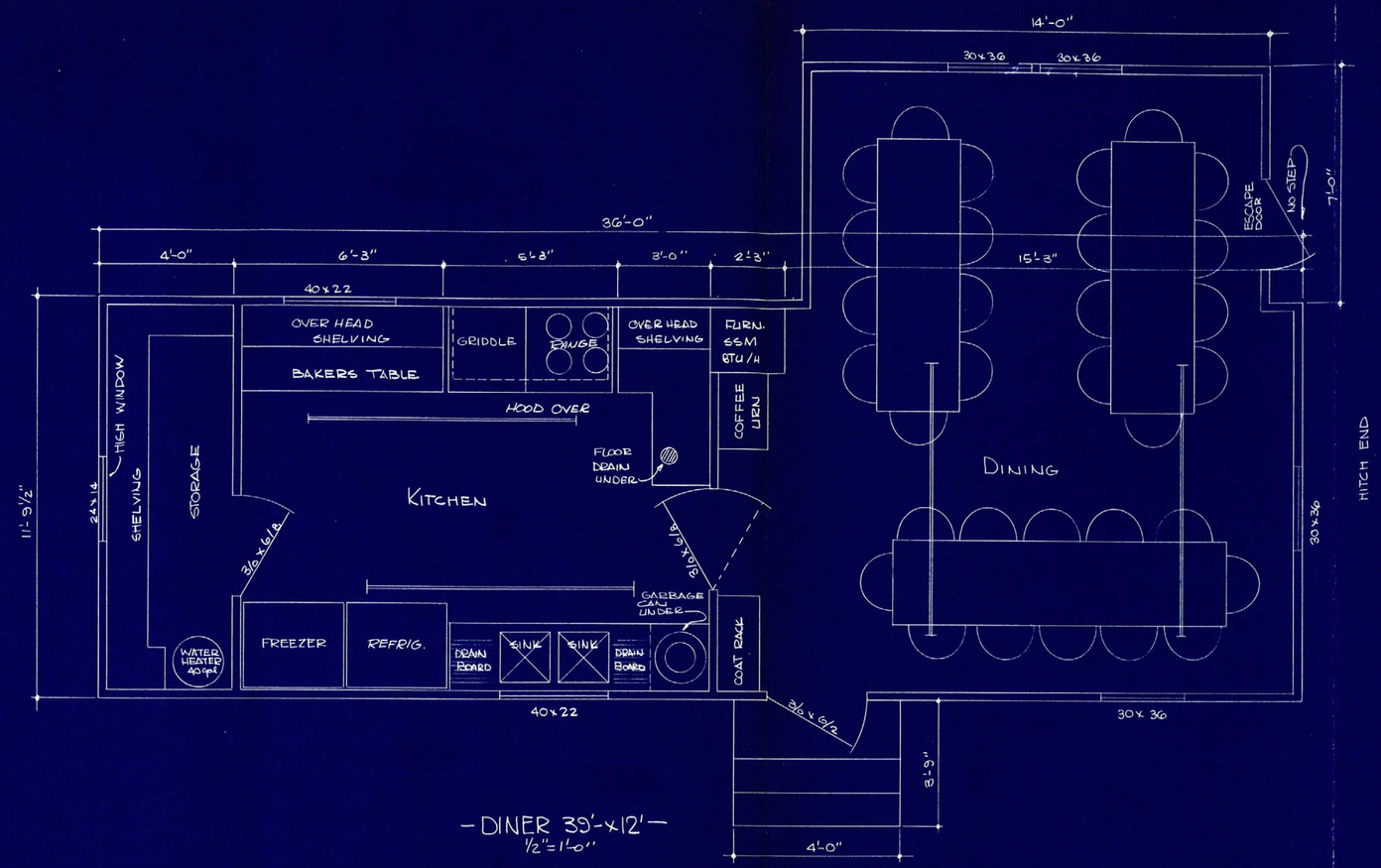
DWG. NO. MCCM-600-23

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL

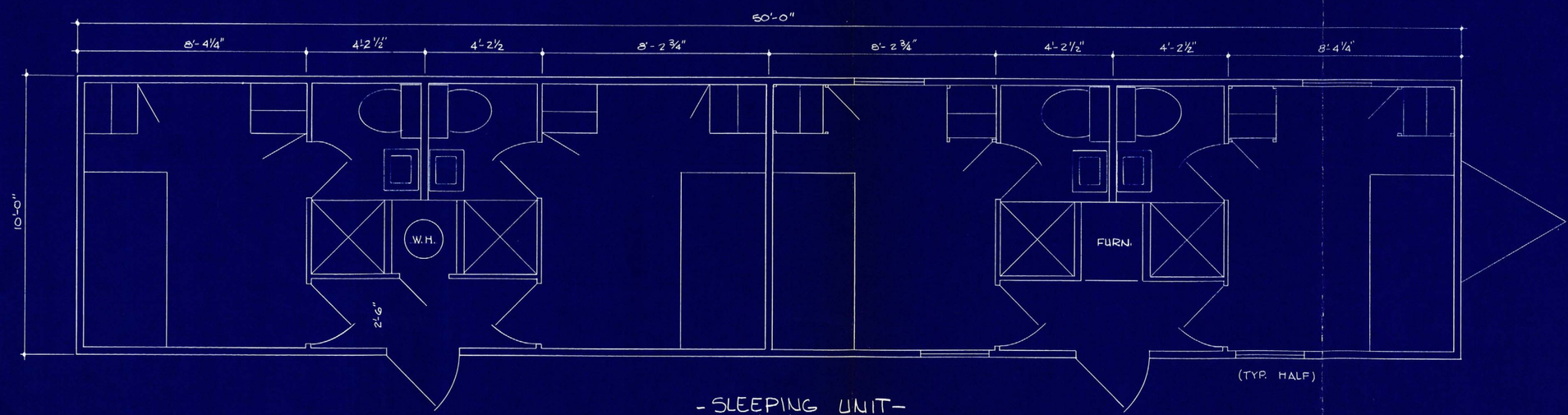


-COUNTER SECTION-
1" = 1'-0"



-DINER 39'-x12'-
½" = 1'-0"

-SPECIFICATIONS-
KITCHEN CEILING: MARLITE
DINING CEILING: ARMSTRONG CEILING PANEL
KITCHEN WALLS: MARLITE
DINING WALLS: LAKESHORE BLOND OAK
8' CEILING
TANDEM RUNNING GEAR
VINYL ASBESTOS FLOOR TILE
3' COVE BASE MOULDING KITCHEN & DINING



-SLEEPING UNIT-
½" = 1'-0"

No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF **LAKESIDE ENGINEERING COMPANY, INC.** AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ±1/64

DESIGN: —
DRAWN: RCB
CHECKED:
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

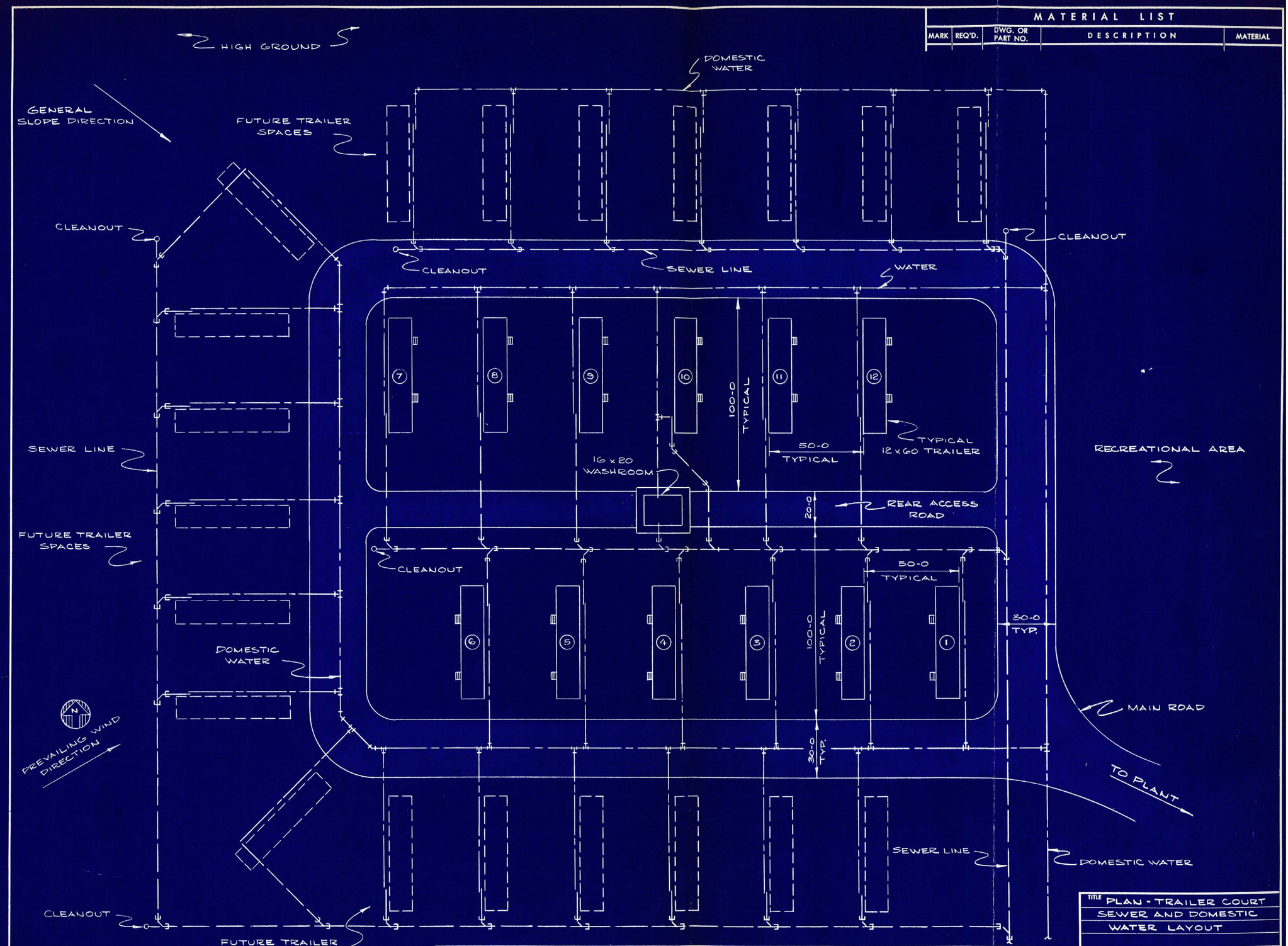
SCALE: NOTED
DATE: 19-NOV. 68

TITLE PROPOSED BUNKHOUSE AND DINING McCRACKEN SILVER MINE

DWG. NO. MCCM-1100.10

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



No.	DATE	REVISION

THIS DRAWING IS THE PROPERTY OF **LAKESIDE ENGINEERING COMPANY, INC.** AND MUST NOT BE COPIED OR DUPLICATED

DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: L.K.M.
DRAWN: L.K.M.
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

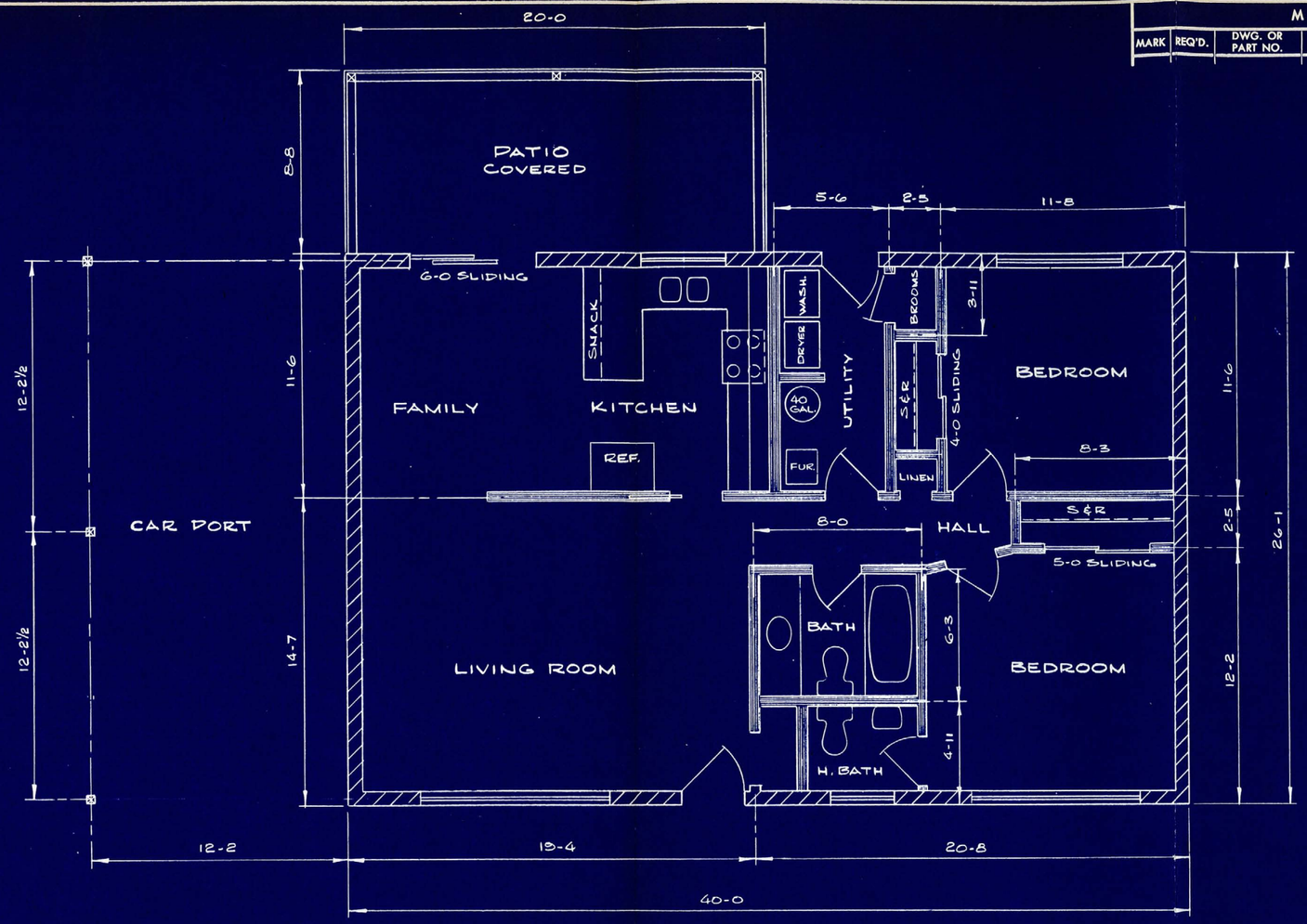
SCALE: 1 INCH = 30'-0"
DATE: DEC. 3, 1968

TITLE PLAN - TRAILER COURT SEWER AND DOMESTIC WATER LAYOUT

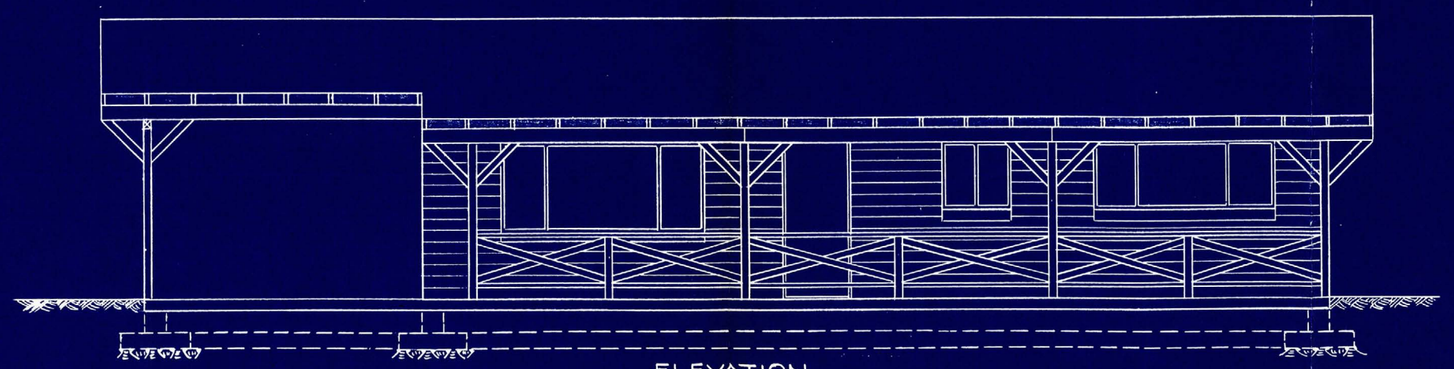
DWG. NO. MCCM-1100.11

REFERENCE

MATERIAL LIST				
MARK	REQ'D.	DWG. OR PART NO.	DESCRIPTION	MATERIAL



PLAN



ELEVATION

No.	DATE	REVISION

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DIMENSION TOLERANCES EXCEPT AS SPECIFIED
DECIMAL: ± .010 FRACTION: ± 1/64

DESIGN: H.T.
DRAWN: L.M.
CHECKED
APPROVED:

Lakeside Engineering Company, Inc.
SALT LAKE CITY, UTAH

SCALE: 1/4" = 1'-0"
DATE: 10 DEC. 68

TITLE HOUSING - PROPOSED PLAN & ELEVATION

DWG. NO. MCCM - 1100.12

REFERENCE